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# The Far Eastern Review

ENGINEERING + FINANCE + COMMERCE

THE PIONEER IN ITS FIELD

*A Monthly Review of Far Eastern Trade, Finance and Engineering, Dedicated to the Industrial Development and Advancement of Trade in Far Eastern Countries.*

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ENGINEERING FINANCE COMMERCE

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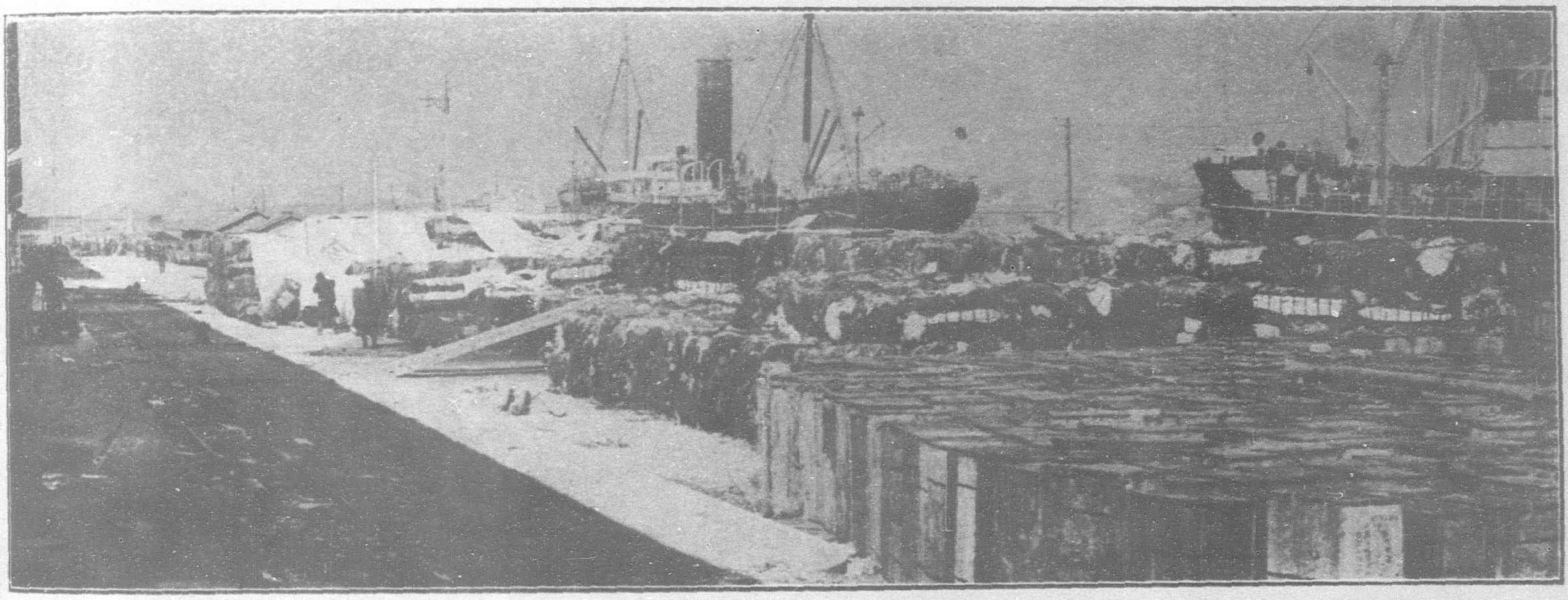
# THE PORT OF KOBE

*By Geo. Bronson Rea*

JAPANESE newspapers report that the authorities of Kobe are conducting a campaign in Great Britain for advertising its port facilities in order to interest British shippers and merchants in routing their cargo through this terminal. As we read the short article outlining the above facts, our thoughts wander back to another campaign of recent date having for its object the discrediting of the port, which resulted in a San Francisco foreign trade association passing a resolution to boycott Kobe (boycotts were then the fashion) and culminated in an official denunciation of the port in a letter directed to the chairman of the United States shipping board by the American secretary of commerce. It was a one-sided campaign, waged through confidential memoranda and reports, with no opportunity for the Japanese authorities to know what was going on, or make their side of the case clear, and apply necessary remedies. The complaints were summed up in an indictment presented by a San Francisco foreign trade association, which charged that shipments were delayed, tampered with, pilfered, damaged and destroyed, and that cargoes were held up so that copies of machines could be made in order that the Japanese merchant could undersell the shipper, etc.

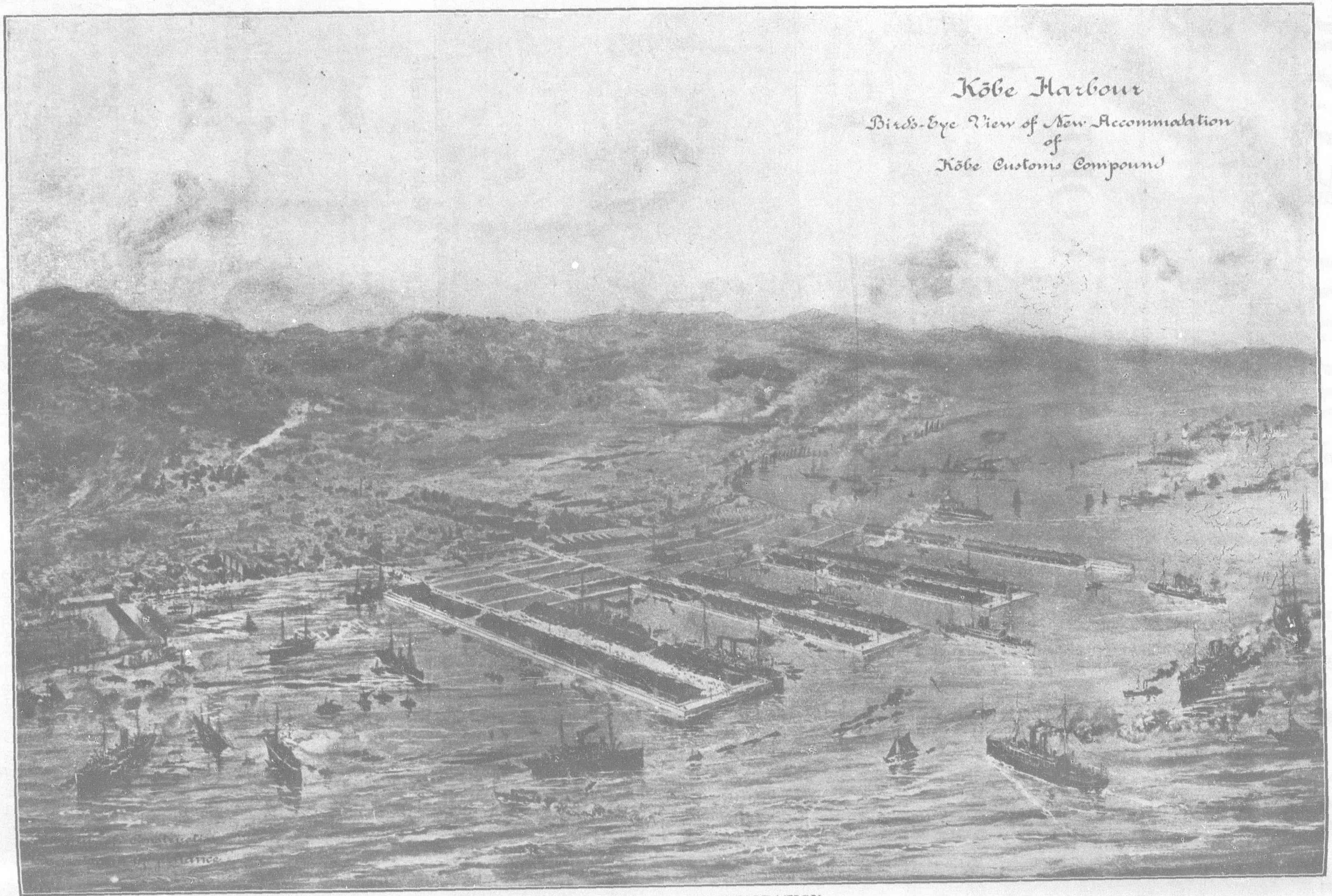


**Congestion of Cargo at No. 4 Pier, Kobe, in November 1918. (Reproduced from Ports of the Orient Number of "The Far Eastern Review," February 1st, 1919**

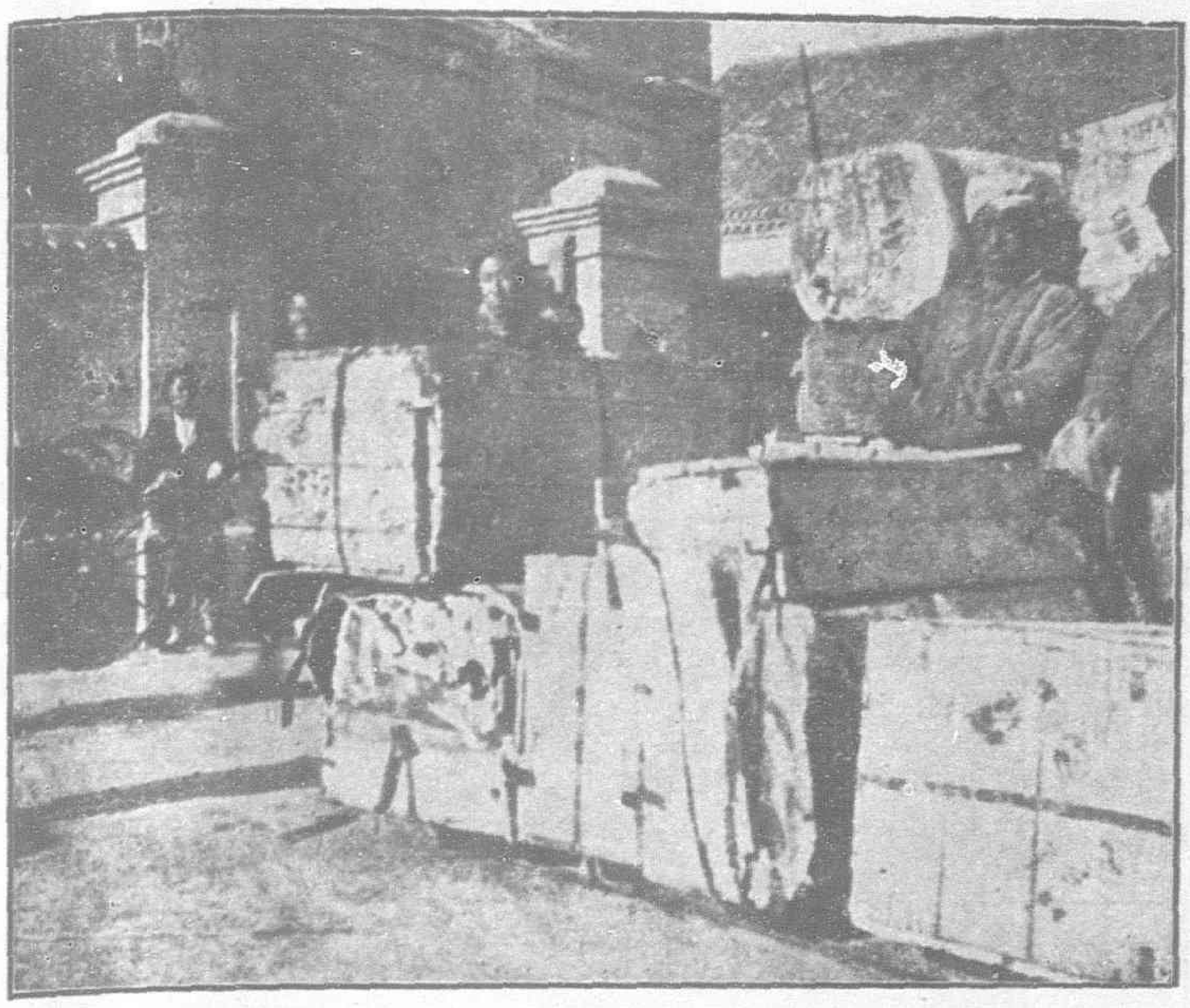
Our interest in this matter has been revived by reading the report of the Madras port trust, which, by proper police protection and energetic prosecution of cargo thieves, has reduced losses to a minimum. Further interest in the subject arises from a perusal of a report dealing with the same methods for the protection of cargo by the Hongkong authorities, alive to the necessity of drastic action and we find that one festive Celestial by the name of Ma Ying-lung was recently sentenced to three years' imprisonment for swindling a steamship company out of four bales of piece goods and three bales of blankets.

There is another side to the picture painted by the detractors of Kobe, a side that the Kobe newspapers might with propriety have invited attention to in order to show that their port did not stand alone as a centre of all that is to be condemned in shipping circles. The other side of the picture was presented by the *New York World* of May 9th, last year, in a full page illustration depicting the methods of dock thieves, whose "activities had become so extensive that insurance rates had been quadrupled, compelling the American Express Company to issue a special warning to shippers." One gang alone was accused of stealing $500,000 in six months. At the same time that the campaign was on to discredit Kobe, the greatest gang of robbers that ever existed in a civilized community were taking their toll of Japanese goods exported to America. In 1919, the United States imported 44,816,918 pounds of raw silk, valued at $329,338,918. Highwaymen, dock-rats, loft thieves, automobile bandits and other well-organized gentry of the same brotherhood, took their toll of this valuable merchandise to the value of no less than $5,000,000. To find a parallel to the operation of these gangs under the shadow of the statue of Liberty, we must go back to the days of Jesse James and other bold knights of the road. The New York police records disclose that the good old American cognomens of the mask and revolver have disappeared and the new bandit hierachy masquerades under such Semetic and Sicilian *aliases* as Rafaelito the Angel-Faced King of the Silk Swipers, Kid Cohenski, the Crepe Cracksmen, Bruno, the Brocade

# KOBE HARBOR



NEW WHARFAGE ACCOMMODATION



How Foreign Goods often Arrive in China, direct, without Transhipping at Kobe

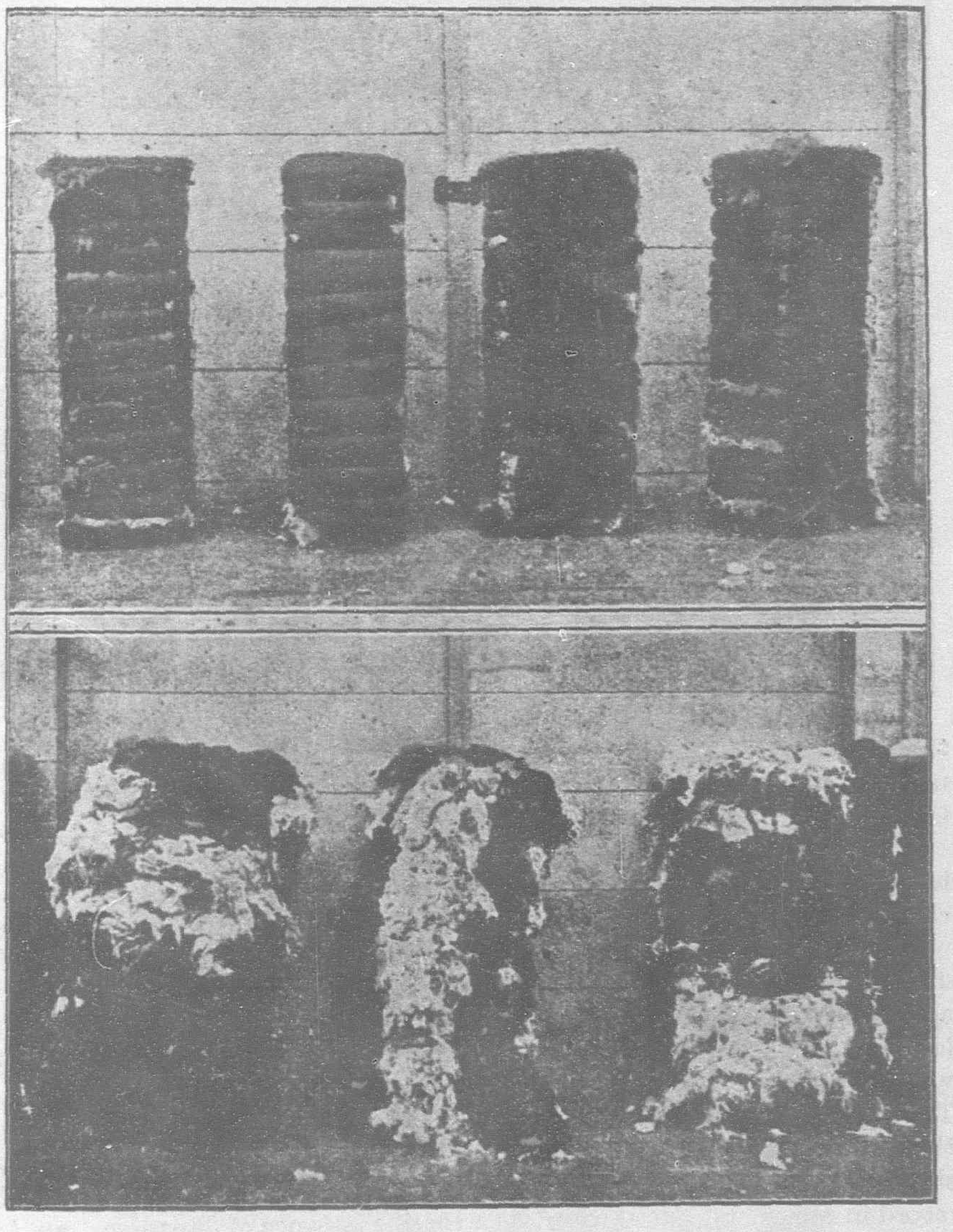
Bandit, or Aniline Ike, the head of the Dye House Trust, etc. The new kings of the road sweep through the pages of the up-to-date dime novel seated in the soft luxurious cushions of the most expensive make of American automobiles, defying the armed guards of the silk caravans as they motor swiftly along the highways leading from Patterson and the silk towns of New Jersey to the Hudson River terminals of the steamships. Anyone who is interested in following the ramifications of this highly organized system of modern brigandage which specializes in taking toll of the principal product of Japan, will find all the details in an article entitled "Queen Silk," published in the *Saturday Evening Post* of June 26th, 1920.

Simultaneous with this *expose* of silk thefts and warning from the American Express Company, there was re-published in the New York newspapers, a dispatch to *The Times* of London dated May 9th, from Sydney, New South Wales, "revealing the existence of a gang of men with world-wide ramifications who are engaged in stealing from cargoes on their way to Australia from English and American ports. The pilfering has taken place prior to shipment from the points of origin, during transmission, and after arrival at destination. At Sydney over $75,000 worth of goods have been stolen since Christmas time and other ports have suffered in a similar manner. As an indication of the extent to which the thieves are carrying out their work it may be mentioned that a piano shipped from London was taken from the shipping case and the case filled with bricks. Other cases supposedly containing costumes of silk goods arrived at their destination stuffed with newspapers, while boxes of merchandise from New York were found to be filled with shavings. An American sea captain remarked when the situation was brought to his attention that he was pleased to bring his vessel into port with his funnels intact."

It is a remarkable fact that these vessels did not stop at Kobe, clearing direct for Australian ports from London, New York or San Francisco, and if read in the proper spirit, the above holds out hopes that the pilferings charged against the port of Kobe may also have taken place before the cargo was delivered there.

At the same time that the port authorities of Kobe were being charged with maliciously delaying foreign shipping and giving quick dispatch to vessels flying the Japanese flag, steamers loading for the Far East at the port of New York were compelled to sail with only a quarter of their cargo because of the inability of the American railways to deliver the freight on time. Hardly a port in the United States escaped serious dock and labor strikes, and in 1919-20 the railways were tied up half the time. There were not cars enough for the domestic needs of the nation. If Japan or any other country had been so unfortunate as to have to route their merchandise through an American port for transhipment to South America or the Antilles, the conditions prevailing last year might well have given just cause for accusations similar to those raised against the port of Kobe.

Faulty packing is the root of many evils. It constitutes the direct temptation for stevedores and cargo handlers to extract goods from the bales or boxes as they pass through their hands. Damages to American shipments may have been the fault of Japanese handling, again it may due to faulty packing. The same complaints that were raised against the port of Kobe were raised against other foreign ports. We hear of faulty packing on all sides. It is the father of thieves, the lure of the dock-rat in all ports of the world. Freight and cargo handling methods the world over are hardly conducive to the safe delivery or transhipment of improperly packed merchandise. The port of Kobe had no monopoly on the smashing of cargo. If conditions were reversed, and it became the fashion to incite enmity against the United States because of similar methods in handling cargo, etc., other nations might, in turn, be justified in accusing Americans of trying to damage their trade while forced to use our ports during the war as points of transhipment. It was impossible for several months to get our transportation problems solved. The railway yards were choked with



State in which Cotton often Arrives in the Far East. The top picture shows Bombay Cotton—the bottom another Foreign Consignment cars loaded with perishable and valuable freight, exposed for weeks and months to the depredations of organized bands of robbers. There may have been, and undoubtedly were, many instances where the port authorities during war-time earned the censure of the foreign shipper, especially American firms in China, who, at the outset of the war, were compelled to use Japanese ships to transport their merchandise across the Pacific, and see them transhipped for China at Kobe. The natural consequence was a glut of cargo, which swamped the storage capacity of the port, taxing its facilities to the utmost. Everybody was clamoring for their goods. That the Japanese, at times, gave preference to their own merchandise, is proof that human nature is the same the world over. There are probably as many instances where the same charges could be duplicated against American, British and French ports during and immediately after the war. We saw the same thing in ports and on the railways of Europe, where every preference was given to national shippers, while the cargo of foreigners was delayed, side tracked and lost.

There is no way that we can indict a whole nation, and to hold that the delays, pilferings, breakage and other damages to cargo at the overcrowded port of Kobe were traceable to a set purpose on the part of the Japanese authorities to intentionally discriminate against American trade is stretching the campaign against Japan too far. On my arrival at Yokohama in August of last year, I telegraphed to Shanghai for a trunk containing summer wearing apparel. It arrived in one week on an Y. Y. K. steamer. The customs brokers in Yokohama were just three months getting that trunk through the customs. If it had been a case of goods shipped to an American firm in Yokohama it would have gone on record in some confidential report as a specific instance of Japanese discrimination or, as proof that it was delayed in order that the Japanese could copy the goods and undersell the American. The facts surrounding the case were simply that the port of Yokohama was glutted, sheds, warehouses and lighters filled to the limit with goods which could not be moved. The trunk in question laid on a lighter for over six weeks, there being no space on the docks on which to unload.

It was the same in Kobe, only worse. Call it what we will, it was simply one proof that Japan went through the same experience that every other country did during the war, and the strain brought about a breakdown in the management of the port of Kobe, and with broken cargo, faulty packing, and all the other drawbacks to normal conditions, the field was wide open for the dock-rats and others who preyed on commerce at this time of great world stress.

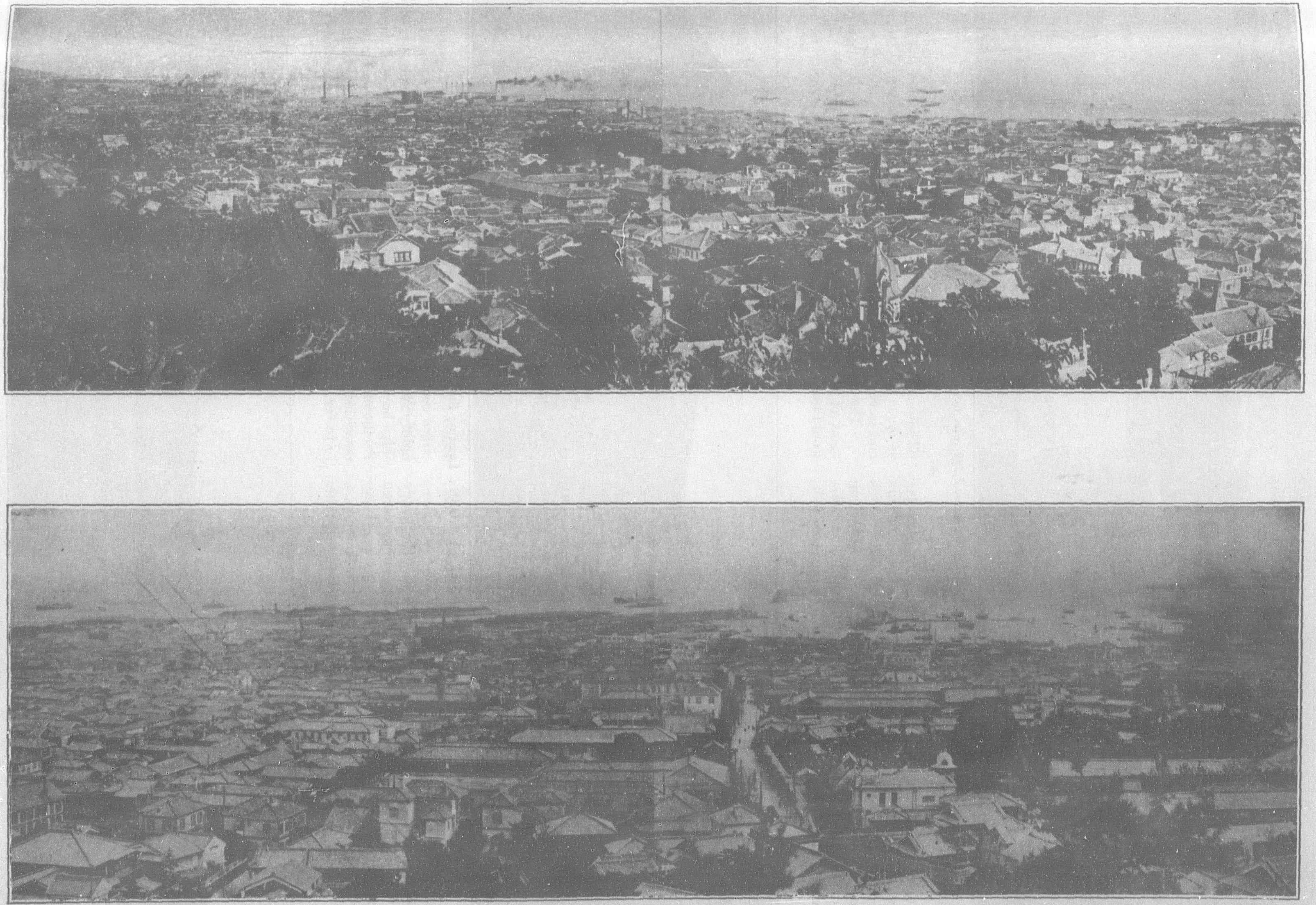
If we listen to the charges brought against the Kobe authorities by those who suffered because of these delays in China, we ought in all fairness look at the other side of the picture, and keep in mind what Judge Thomas Burke of Seattle had to say not long ago:

> **"Seattle should not forget that when our own government failed to give us ships, to give us world commerce, when American companies were operating from other ports on this coast that it was a Japanese steamship line which acted as handmaid to our commerce. IT PUT US ON THE WORLD'S MAP."**

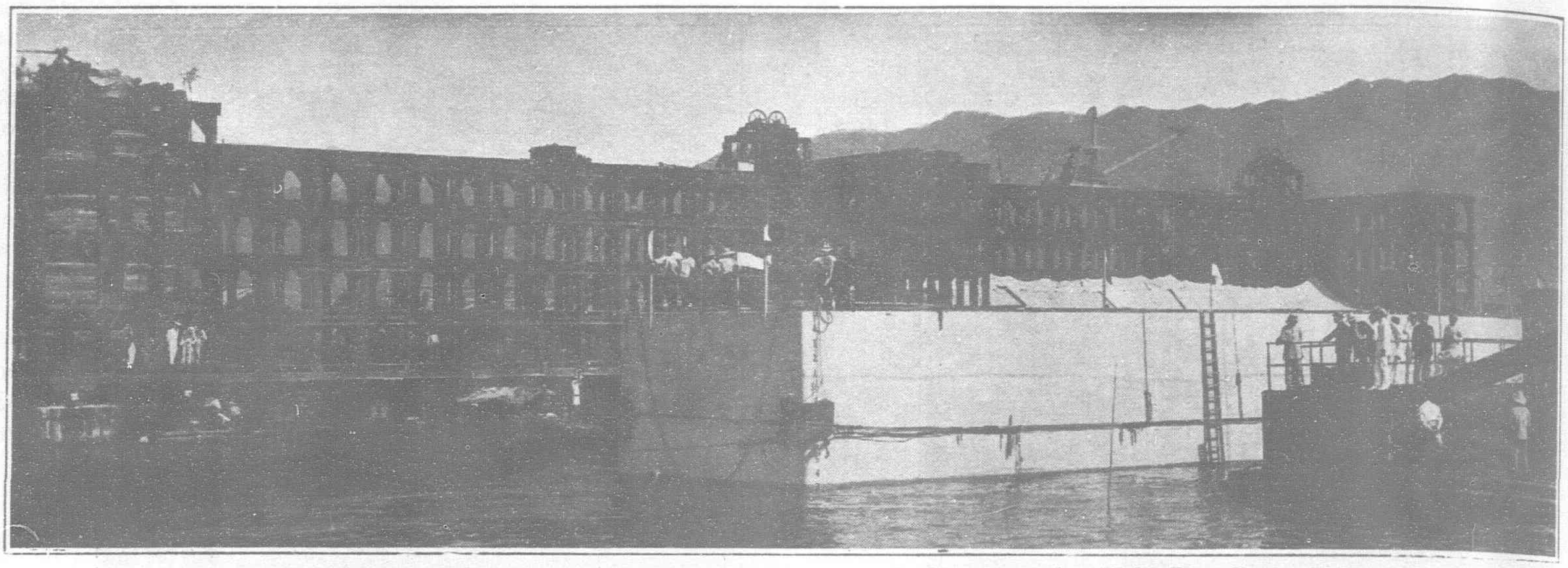
The testimony of Judge Burke, backed by the full weight of the Seattle chamber of commerce and the influence of the great trans-continental railway which connects with the Japanese liners, should weigh in the balance against the charges brought against the port of Kobe by other Americans in this part of the world.

Crossing the Pacific last year, I discussed this question with an American merchant who, for a time, practically dominated the vegetable oil imports into the United States. I recall how he gra-

THE PORT OF KOBE



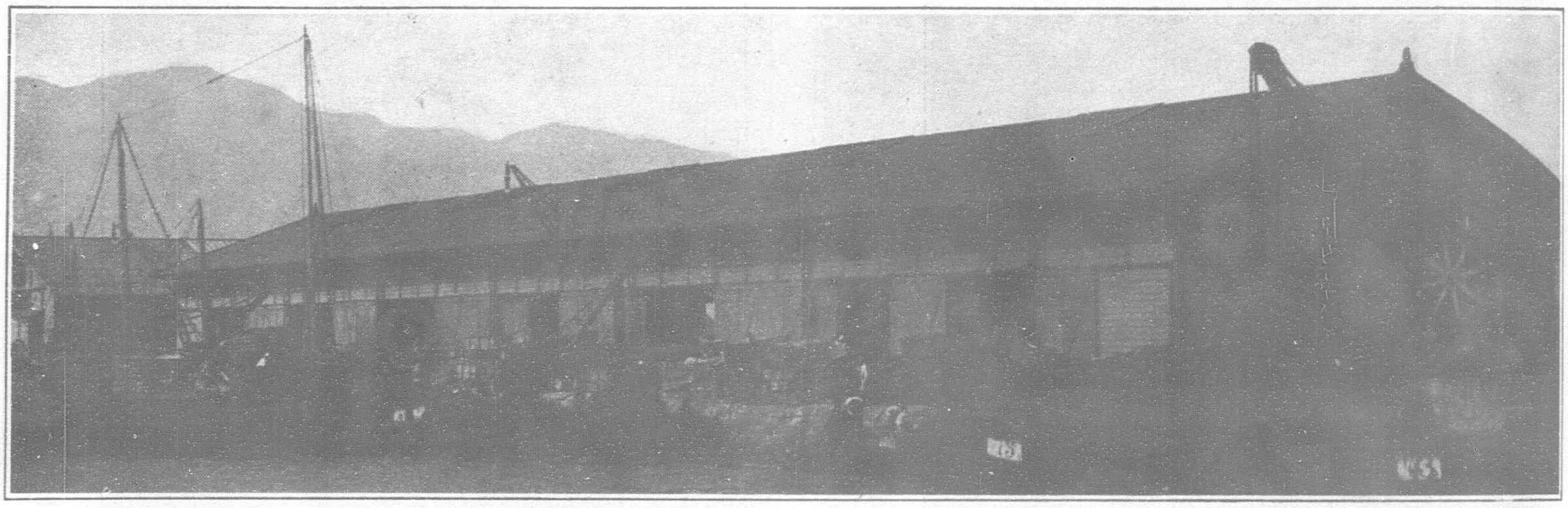
PANORAMIC VIEWS OF THE PORT OF KOBE



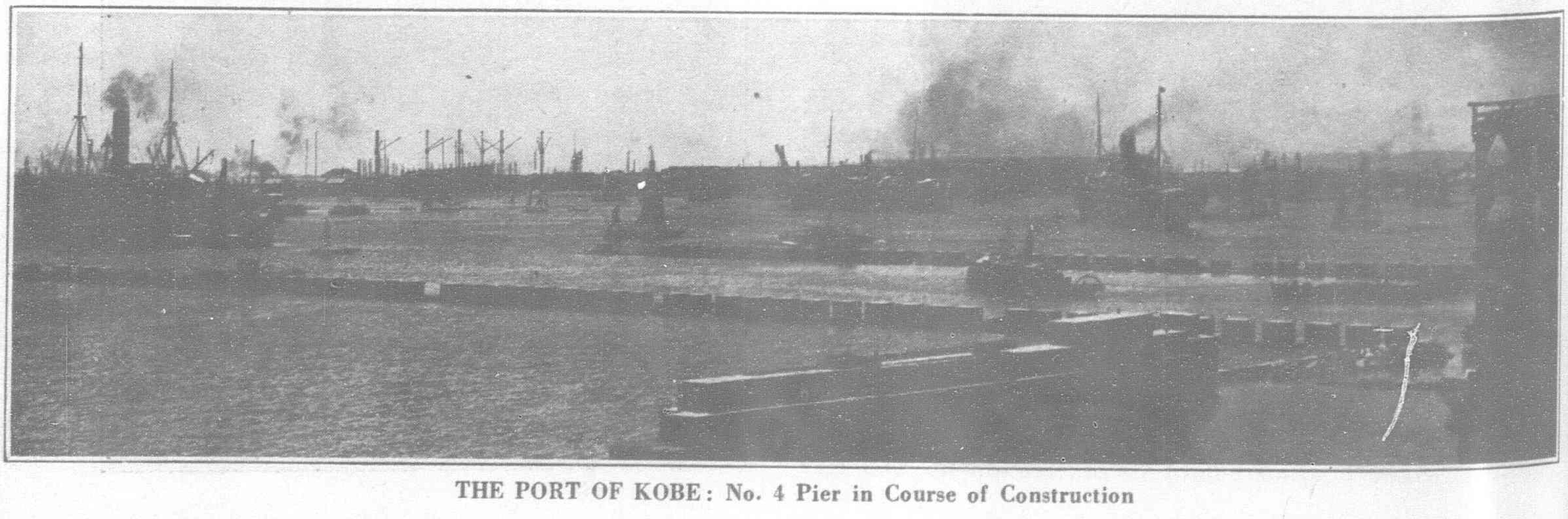
THE PORT OF KOBE: Ferro-Concrete Cassion, 2,300 tons deadweight used in Kobe Pier Construction

phically described the great losses in leakage arising from improper containers, which was rectified, in part, by shipping the oil in bulk in tank steamers, and how a great part of the leakage and loss was due to improper packing and unloading at Seattle, the American port of discharge, where, he declared, the wharf floor held at least a quarter of an inch of oil. Here, the boot was on the other foot, and the Japanese shipper of soya bean oil had to pay the heavy penalty because of faulty packing aggravated by clumsy cargo handling. I do not recall ever reading in the Japanese press any accusation that their merchants were being penalized by Americans, who deliberately damaged their cargo, in order to compel vegetable oil shipments to pass through American firms. They certainly had as much justification for making such an accusation, as Americans had in charging them with similar practices in Kobe.

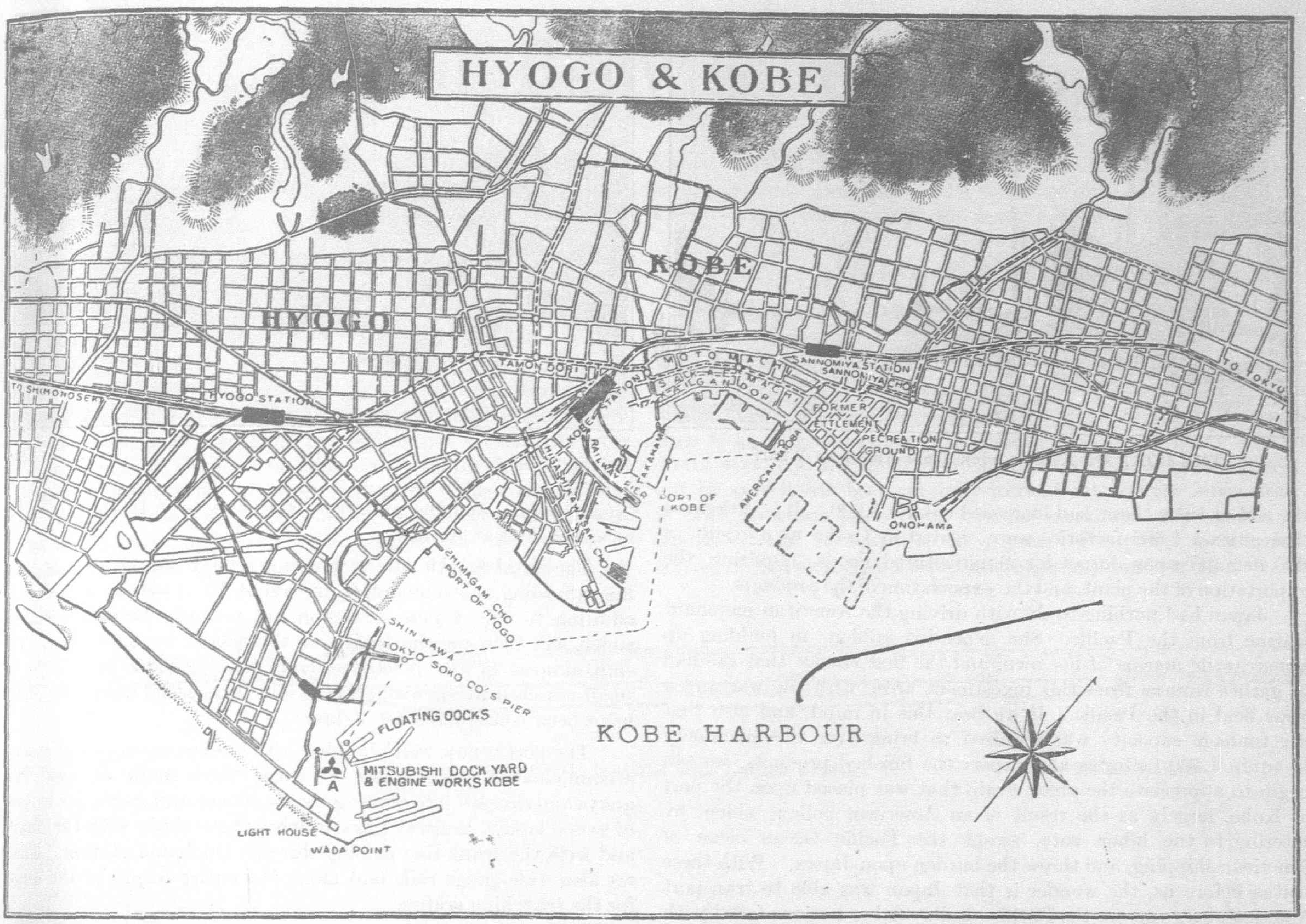
The Japanese authorities are spending millions for the improvement of the port of Kobe. It seems hardly probable that they would knowingly permit practices to take place which will in time nullify these expenditures by driving away trade. American ships have entered the field competing for their share of the trans-Pacific business. The port of Kobe is out after their business, and notwithstanding the fact that Japan has a large mercantile marine to foster, it can be safely taken for granted that conditions which



THE PORT OF KOBE: Landing Stage for Barges



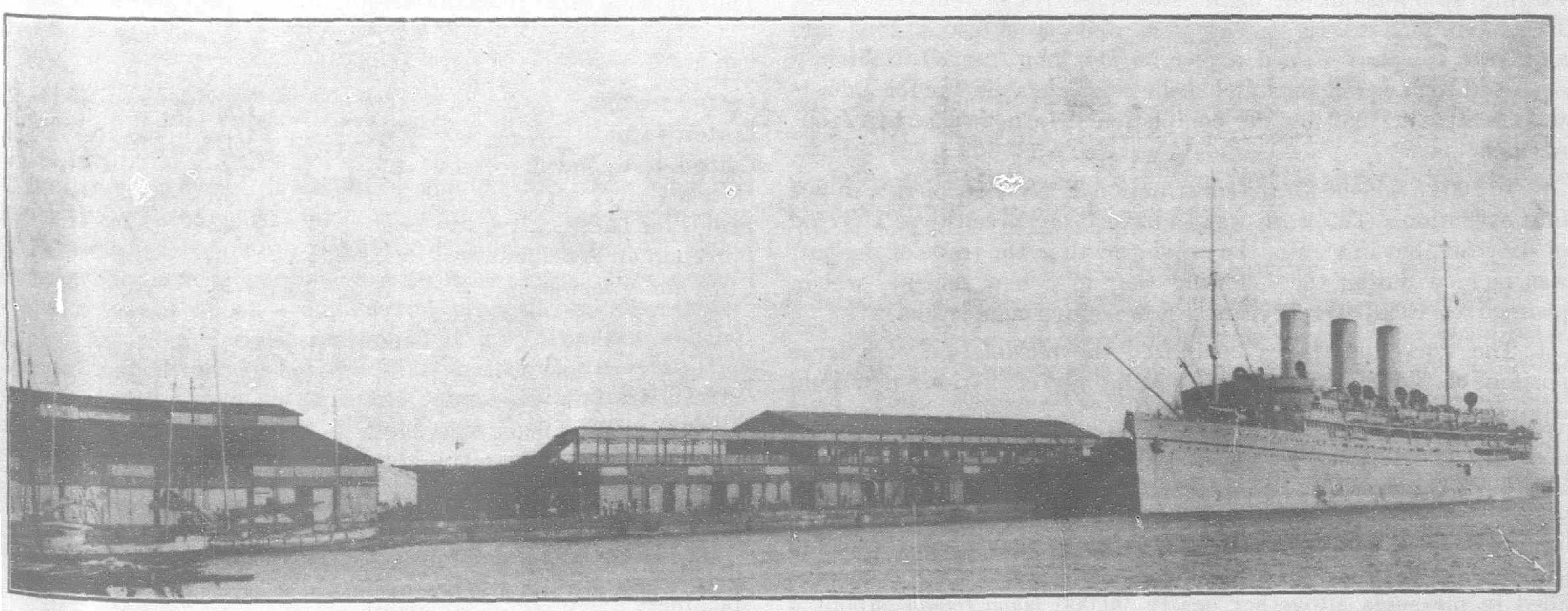
THE PORT OF KOBE: No. 4 Pier in Course of Construction



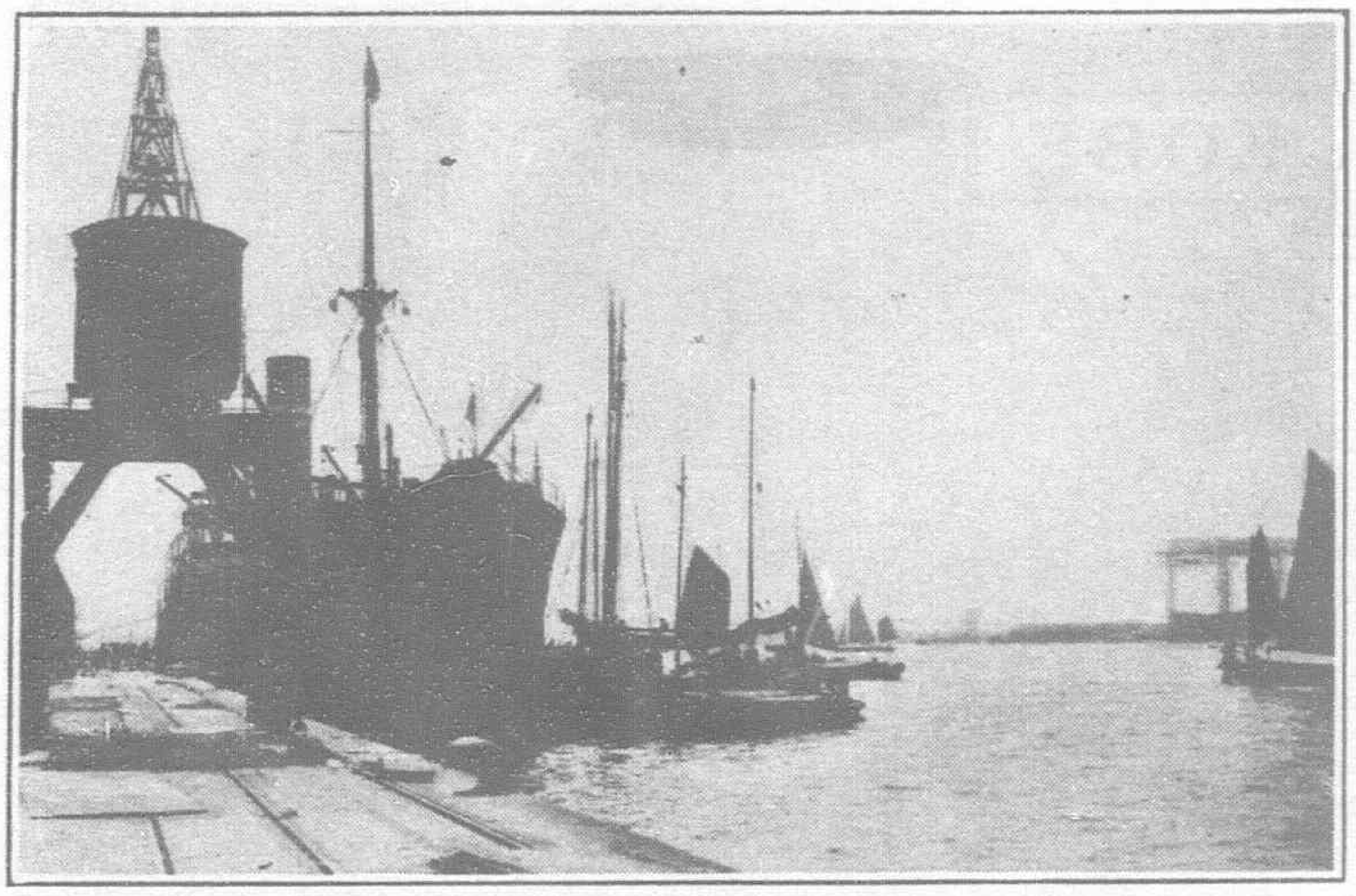
KOBE HARBOR

arose out of the war, can no longer occur, and American ships and cargo will receive every consideration and facility to induce them to utilize the port.

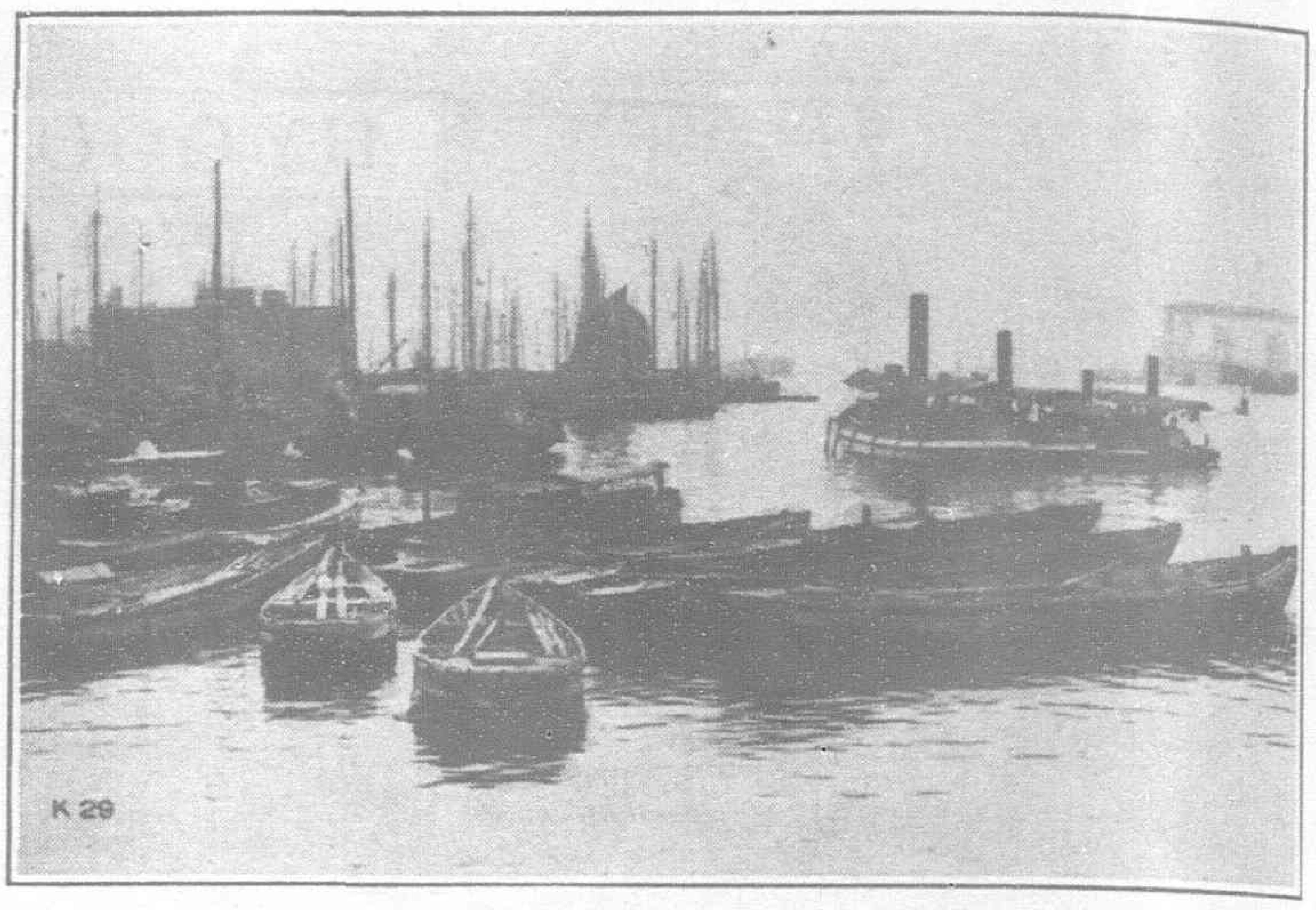
Those who find delight in ascribing the breakdown of the Kobe port facilities during the war to a set policy of discrimination against American goods on the part of the Japanese government, especially as it affected transhipments of American cargo, should, in all fairness, bear in mind that Kobe is the one deep-water outlet for the greatest centre of Japan's industrial activity. Like America, Japan was called upon to bear her share of providing the world with manufactured products during the war, calling for an unprecedented industrial expansion. This continued up to the collapse of the export business in April of last year. Kobe is a great manufacturing as well as a great distributing centre. In 1919, there were 2,147 factories in the city employing over 70,000 hands. The Kobe district also includes the most important industrial region of Japan, the Osaka Bay district, and consequently enjoyed more than any other part of the empire, the great wave of industrial prosperity which followed the war. In the Osaka Bay district alone at the end of 1917, there were over 5,000 factories, and by



THE PORT OF KOBE: No. 1 Pier. "Empress of Russia" on the Berth



**THE PORT OF KOBE:** View from American Wharf



Pier 4

the end of 1919, these had increased to over 6,000. It is estimated that at least 1,500 factories were created in Osaka as a result of the demand upon Japan for manufactured goods, requiring the importation of the plant, and the exportation of the products.

Japan had nothing to do with driving the American merchant marine from the Pacific. She expended millions in building up a mercantile marine of her own, and the first chance that she had to garner returns from this investment arose with the war and a clear field in the Pacific. If we bear this in mind, and also that her tonnage capacity was required to bring over the machinery to equip 1,500 factories and export the finished products, we can begin to appreciate the great strain that was placed upon the port of Kobe, largely as the result of an American policy, which, by catering to the labor vote, swept the Pacific Ocean clean of American shipping, and threw the burden upon Japan. With these truths before us, the wonder is that Japan was able to transport American cargo across the Pacific at all. Other nations faced with a similar problem would have Commandeered all available cargo space to foster and advance their own trade.

Kobe harbor is divided into three sections : two for merchant ships of all kinds, and the third for the vessels of the Japanese navy. It encloses altogether an area of 2,741 acres, and the general depth is between three and four fathoms.

The construction of the first harbor works at Kobe marks the very beginning of Japan's foreign trade, for it was in 1868—the year after the opening of the port—that customs offices, four landing places, and three warehouses were built. From 1873 onwards these works were steadily improved and extended, until in 1901 the port possessed altogether seven landing places, with varying accommodation, eight warehouses, and fourteen sheds. There were nine cranes, varying in capacity from 5 to 30 tons, and a private company owned a pier 90 *ken* long (*ken*=7-ft. 5½-in.), equipped with warehouses and sheds. A safe anchorge for lighters was created in 1902 by the completion of a new wharf in front of Onohama.

In 1905 a scheme for the construction of two new piers was put into execution. The work was to have been spread over a period of six years, but in view of the rapid growth in the trade of the port was merged during the following year in a new scheme, which, planned to extend over 15 years, is now nearing completion.

The work undertaken comprised the reclamation of a large portion of the shore, and the setting up of various new land equipments.

The reclaimed land extends from Onohama beach to the foreshore of the former foreign settlement along a line of a uniform depth of about 20 feet. Breakwaters will be built out from this line, with mooring quays alongside them, so that when completed the work will assume a "comb toothed" formation. The area filled in measures altogether nearly 90,000 *tsubo* (*tsubo*=about 4 square yards), and the reclaimed land rises over 11 feet above the mean sea level at low tide.

The total length of the mooring quays constructed is 1,592 *ken*, affording accommodation for about 19 vessels at a time. In addition to this a new extension has recently been undertaken, which will increase the length of the quays by 1,500 *ken*. The embankment of the reclaimed land also provides anchorage for small vessels drawing about 9 feet, and two special unloading places have been constructed for lighters.

The port is now well provided with land equipment and storage accommodation. There are 18 large sheds built alongside the quays and divided into waiting rooms, offices and stores for cargoes of every kind. Railway lines connect these sheds with the quays, and with the trunk line passing through Onohama station. There are also wide-gauge rails laid along the entire length of the quays for the travelling cranes.

The expenditure for these works, including the reclamation of land and the various extensions undertaken, amounts to a total of Y. 37,430 million, and the management is in the hands of the department of finance and the department for home affairs.

The work is not yet completed, but already it has improved the facilities of the port sufficiently to render Kobe the central freight market of the East, and when the new extensions are completed, Kobe will possess one of the finest harbors in the world.

The exports and imports passing through this great distributing centre are of the most varied character. The influence of the cotton industry of Osaka is felt in both cases, raw cotton being the most important import and cotton goods the leading export. The following table gives the chief figures for the first half of 1920 :—

| EXPORTS | Yen. |
|---|---|
| Cotton textiles | 49,151,875 |
| Cotton yarn | 23,055,921 |
| Cotton knit goods | 11,482,719 |
| Matches | 15,000,295 |
| Braids for hats | 11,394,274 |
| Porcelain and earthenware | 6,387,597 |
| Glass and glassware | 5,971,458 |

| IMPORTS | |
|---|---|
| Raw cotton | 388,307,725 |
| Wool | 71,598,339 |
| Iron | 56,960,865 |
| Iron ore | 15,305,864 |
| Sugar | 9,707,228 |
| Beans | 11,116,749 |
| Oil cake | 34,354,109 |
| Machinery | 22,105,874 |

# An Elevated Railway for Shanghai

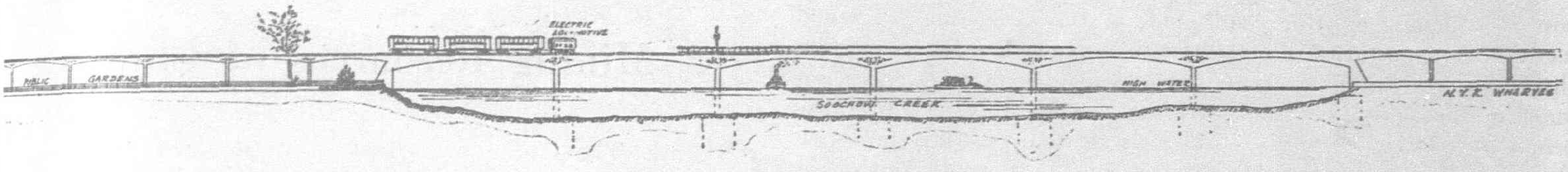
It was only a few weeks ago that a serious-minded and deep-thinking gentleman, who had stayed in Shanghai sufficiently long to be much impressed with the city, on the eve of his departure sent to the *North-China Daily News* an open letter to Shanghai, in which he made various suggestions for the improvement of the settlement itself and its government. His ideas were very favorably commented upon in places where such matters are discussed, though there was one point—his idea for the improvement of traffic conditions—which many held to be too advanced, if not impracticable, for Shanghai. That was an elevated railway.

Such a thing had been hinted at before, not unnaturally with the ever increasing number of Americans coming here, but his was the first proposal put seriously into print. Curiously, a local expert had for a long while been working out this very matter and we are now able to put forward his suggestions. The author is Mr. Sidney J. Powell, A.M. Inst., C.E., the well-known civil engineer, architect and surveyor. It should be pointed out in the beginning that Mr. Powell's scheme is but a suggestion, not the definite plan of an established company, though it is a fact that some highly placed and influential gentlemen who have seen it are already anxious to take it up as a commercial proposition. Mr. Powell, however, has worked on it as though it was a definite scheme. He has presumed that he has the funds and the territory and has accordingly worked out specifications, quantities and materials in a strictly professional way, so that the plan must be considered as something more material than a dream.

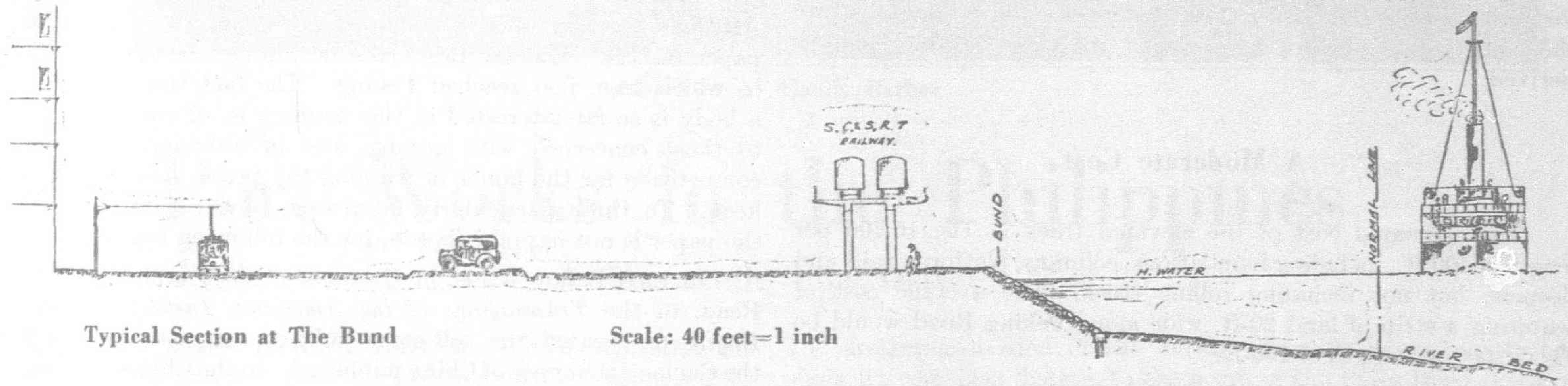
Mr. Powell is, of course, well acquainted with local conditions and when asked about the great query regarding an elevated railway—Will Shanghai's soil stand it ?—he said there was no question that the scheme was feasible. He admitted there would be difficult places, but concrete rafts would meet the case. He foresees difficulty regarding way leaves, but does not consider them insurmountable and, anyway, if a definite scheme is decided on, a route may be chosen which will not offer such troubles.

### An Eye to the Aesthetic

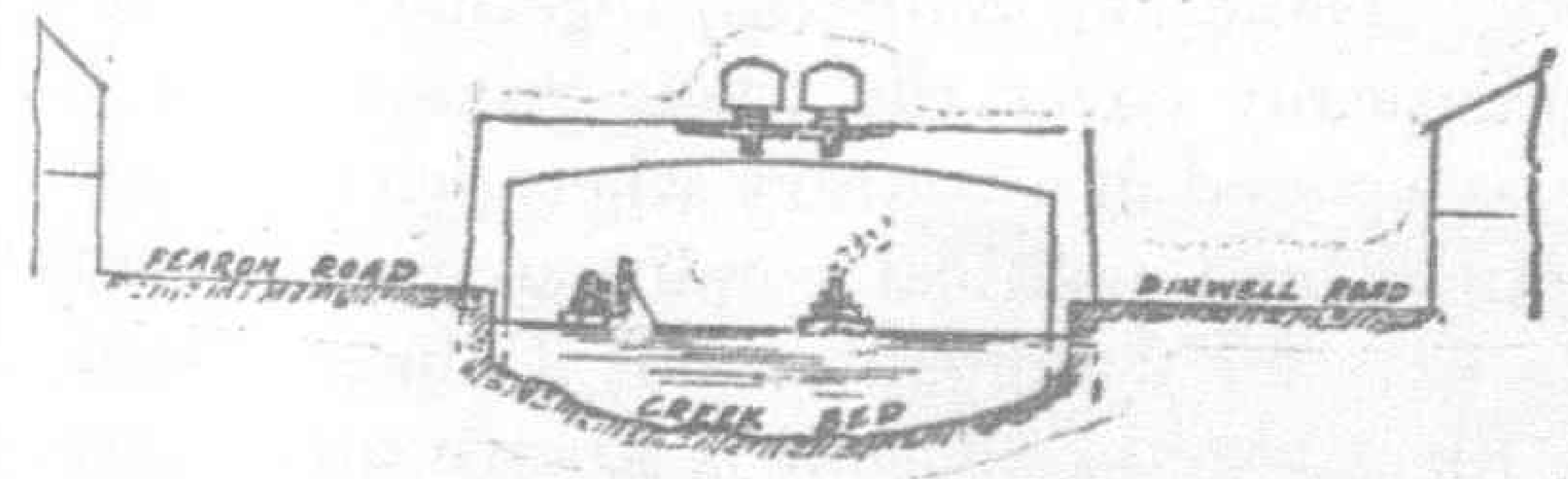
The author has an eye to the æsthetic and his railway would not be an unsightly business like the New York elevated line, with its great timber baulks and the accompaniment of roaring trains. Mr. Powell has planned for concrete standards of artistic design, rigid and solid enough to ensure that there will be less noise than is at present caused by a passing tram car. Many will no doubt wonder at the small figure at which he places the initial cost, but he says it has been carefully worked out and the inner circle, if work proceeds on several sections simultaneously could be completed and in operation in a year. For power he suggests relying on the municipal supply, adding something over Tls. 500,000 per year to the settlement's revenue, or this expenditure could be capitalized for a separate installation.



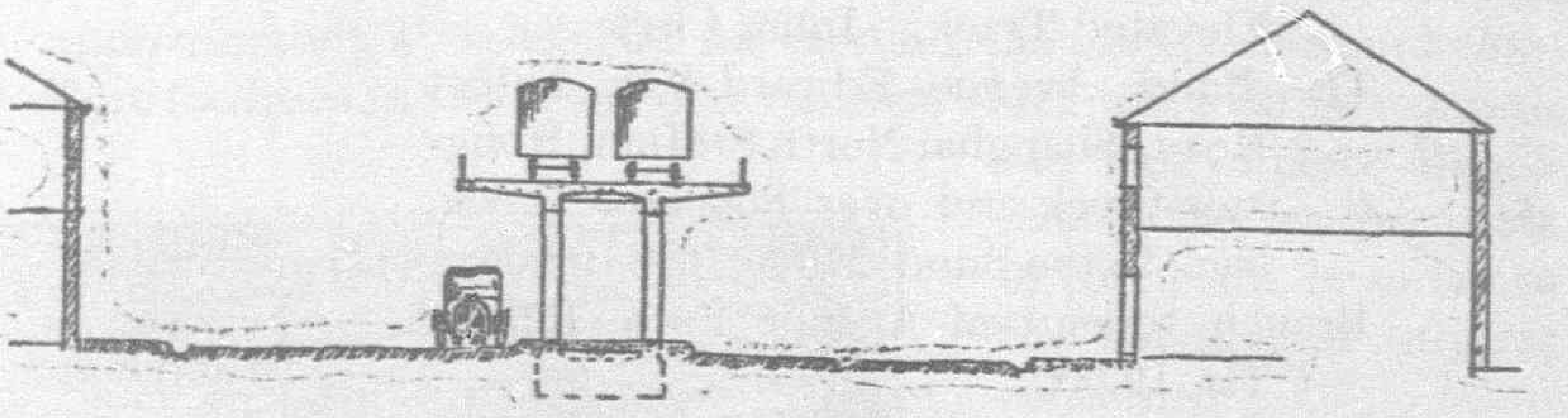
Elevation of Bridge at the mouth of Soochow Crrek (parallel with Garden Bridge) Scale: 80-feet=1 inch



Typical Section at The Bund Scale: 40 feet=1 inch



Cross Section at Hongkew Creek
Scale: 80-feet=1 inch



Typical Section in Avenue Edward VII.
Scale: 40 feet=1 inch

### The Broad Outline

The following is an outline of Mr. Powell's scheme :—

The proposed railway will run on an elevated track constructed of re-inforced concrete and coming down by easy gradients to the level of the Shanghai-Nanking Railway, as it approaches that railway's property and will, with their co-operation, run on their property from Jessfield Station to where the track leaves their main North Station. The branch to their South Station (Hangchow Line) can come down to ground level after leaving the boundaries of the native city.

The railway to be electrically powered on the centre rail system, thus obviating overhead wires. It will be capable of conveying passengers from the Bund to the western or eastern districts in a few minutes. The seating capacity of each train can be at least 500. The services proposed would be an inner circle running from the Bund viâ Avenue Edward VII. Thibet Road, North Thibet Road, Shanghai-Nanking North Station, end of Range Road, Hongkew Creek and back to the Bund, and an outer circle service to run from the Bund viâ Jessfield Station and the Shanghai-Nanking Railway North and back to the Bund. Intermediate service to South Station (Hangchow Line) and to Wayside.

### Art and Utility

The railway would obviate any destruction of the Public Gardens and, as the concrete arches permit of graceful design, should not be unsightly. At the same time, it will provide a shady walk. The railway would relieve existing and increasing congestion of traffic in Shanghai, as it would not only cope with passenger traffic, but would deal with goods which at present are conveyed from mills and factories in different parts of the settlement and outlying districts, taking this traffic off the already overcrowded existing roads.

The cost of the railway would be considerably less than the cost of widening existing roads and, at the same time, it would increase transportation possibilities in a much greater proportion than a road widening, in that a road widening of 10-ft. does not increase the speed of transportation considerably, whereas the proposed railway does do so. The railway would not interfere with the passage of existing means of transport. It would run on or over public or railway property throughout its entire length, except for short distances and over those distances could no doubt secure the co-operation of property owners, in view of the facilities derived.

### A Moderate Cost

The estimated cost of the elevated track is Tls. 16,400 per length of 100-ft., including foundations, columns, platform, rails and sleepers, but not including rolling stock. The average cost of acquiring a strip of land 20-ft. wide along Peking Road would be Tls. 22,000 per length of 100-ft.

The total estimated cost is as follows :

| | | |
|---|---|---|
| Elevated Track.—Inner Circle. | | |
| The Bund, Avenue Edward VII, Thibet Road, Shanghai North Station, Hongkew Creek and over Soochow Creek, back to the Bund, 270 by Tls. 19,000... | | Tls. 5,130,000 |
| Branch to end of Avenue Foch, 130 by Tls. 19,000 ... ... ... ... | | 2,470,000 |
| Continuation at low level to Jessfield Station, 75 by Tls. 600 ... ... | | 45,000 |
| 40 *mow* at Tls. 2,000 ... ... ... | | 80,000 |
| Extension to Wayside, 60 by Tls. 19,000... | | 114,000 |
| Extension to south of native city, 65 by Tls. 19,000 ... ... ... ... | | 125,000 |
| Extension at low level to South Station (Hangchow Line), 30 by Tls. 600 ... | | 18,000 |
| | | Tls. 7,982,000 |
| Allow for stations ... ... ... ... | | 850,000 |
| Rolling stock— | | |
| Ten locos. at Tls. 5,000 ... | 50,000 | |
| Cars and wagons, 50 at Tls. 8,000 | 40,000 | |
| Equipment, signals, etc. ... | 100,000 | |
| | | 190,000 |
| | | Tls. 9,022,000 |

| | |
|---|---|
| Annual expenditure— | |
| Staff, etc., per annum ... ... ... | Tls. 96,000 |
| Power, per annum ... ... ... ... | 547,500 |
| Stores, etc. ... ... ... ... ... | 50,000 |
| Interest charges ... ... ... ... | 500,000 |
| | Tls. 1,193,500 |

| | |
|---|---|
| Annual revenue— | |
| Passengers (2,000,000 per week), 2,000,000 by 10 cts. by 52=$10,400,000 ... | Tls. 7,200,000 |
| Goods (500 tons per day), 500 by 365= 182,500 tons at $2=$365,000 ... | 262,800 |
| | Tls. 7,462,800 |

The above is Mr. Powell's scheme. He has studied elevated railways elsewhere and has made comparisons. Also he says that he is confident he has not underestimated the expenses of his railway, nor overestimated its probable revenue, but rather the reverse in each case.

## Mining Resources of China

COMMENTING on the need of a development policy on the part of those interested in China mining the Peking correspondent of the *London Times* says The Royal Society of Arts has recently offered a money prize and silver medal for a paper on the "Mineral Resources of China," conditions relating to which have just reached Peking. The fact that so influential a body is so far interested in this country is, of course, gratifying to those concerned with mining, and in ordinary circumstances competition for the honor of winning the prizes would have been keen. To those particularly interested, however, the subject for the paper is not happily chosen, for the following reasons.

In 1908 Bailey Willis, in *Economic Geology*, and, in 1911, T. T. Read, in the *Transactions of the American Institute of Mining Engineers*, treated the self-same subject exhaustively. In 1919 the Geological Survey of China published—in the Chinese language—two comprehensive bulletins on the geology and coal and mineral resources of the country, and a third one is in preparation relating to the iron resources. These two bulletins, together with the one about to appear, practically cover the whole ground as far as it is possible for it to be covered in a country where scientific investigation is in its infancy, and political conditions so chaotic that systematic study is extremely difficult. The Chinese bureau of mines, in fact, is a repository of all that is known about geology and mining in China, but much of this knowledge is locked away in a language inaccessible to all but a very few. Anybody knowing Chinese and having access to the information stored by the bureau would have an enormous advantage in competing for the prizes offered by the Society of Arts. The paper so written might be extremely interesting, but it would not contain much that was original on the part of the writer, nor would there be any serious competition against it.

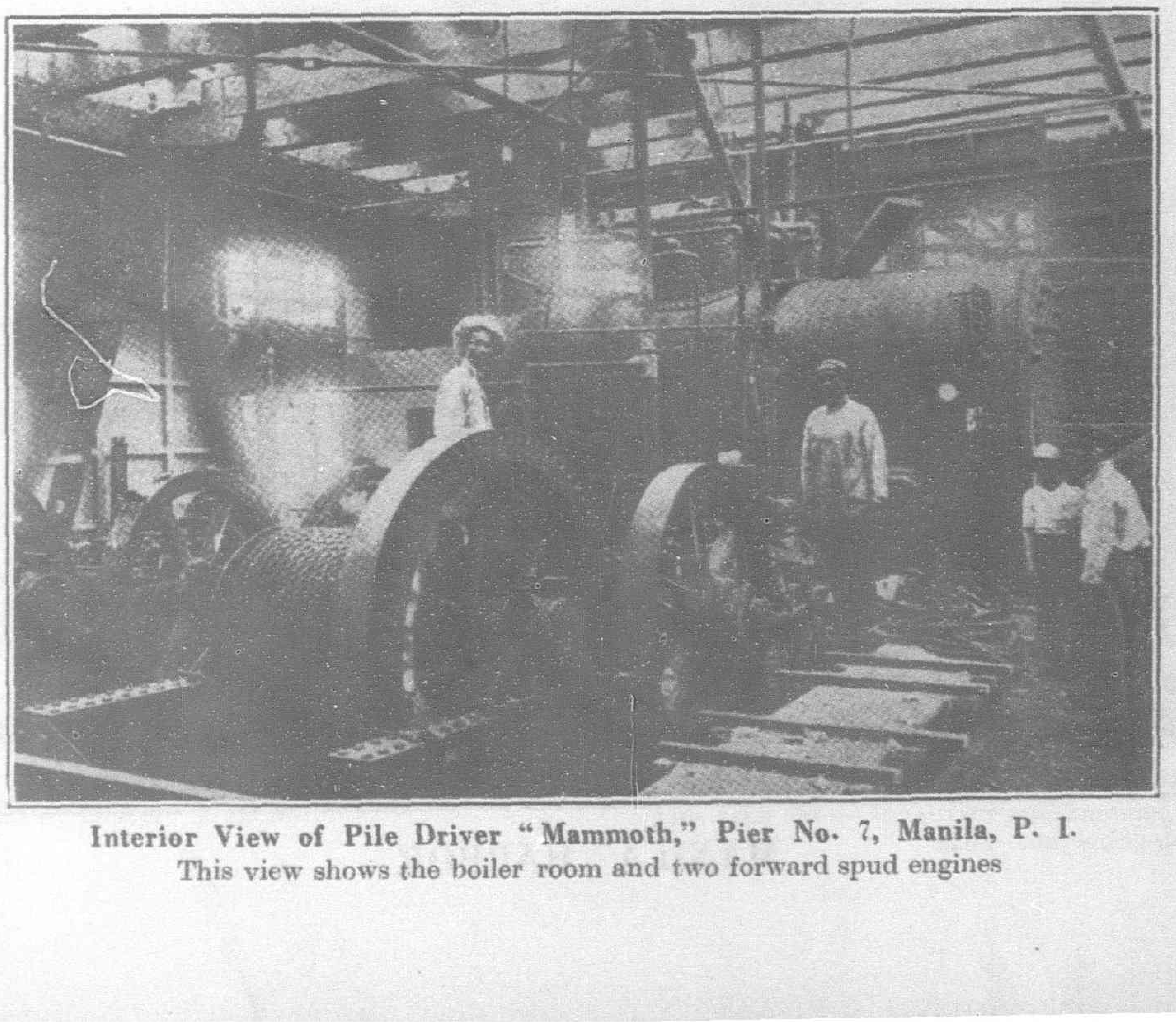
What is really wanted is discussion, not on the mineral resources of China, for these are as well known as they can be in present circumstances, but on their development. The bureau of mines in Peking does everything for geology and nothing for mining, except to draft strangulatory regulations. The treaty powers protested against the Chinese mining regulations of 1914, and the government called in Mr. G. G. S. Lindsay, the well-known Canadian expert, to draft fresh regulations. His draft, however, has been pigeon-holed, and mining development in China, so far as foreigners are concerned, remains at the starting-point of 1903.

Aerial View of Manila Harbor

# Port Works in the Philippines

## A Mammoth Pile Driver

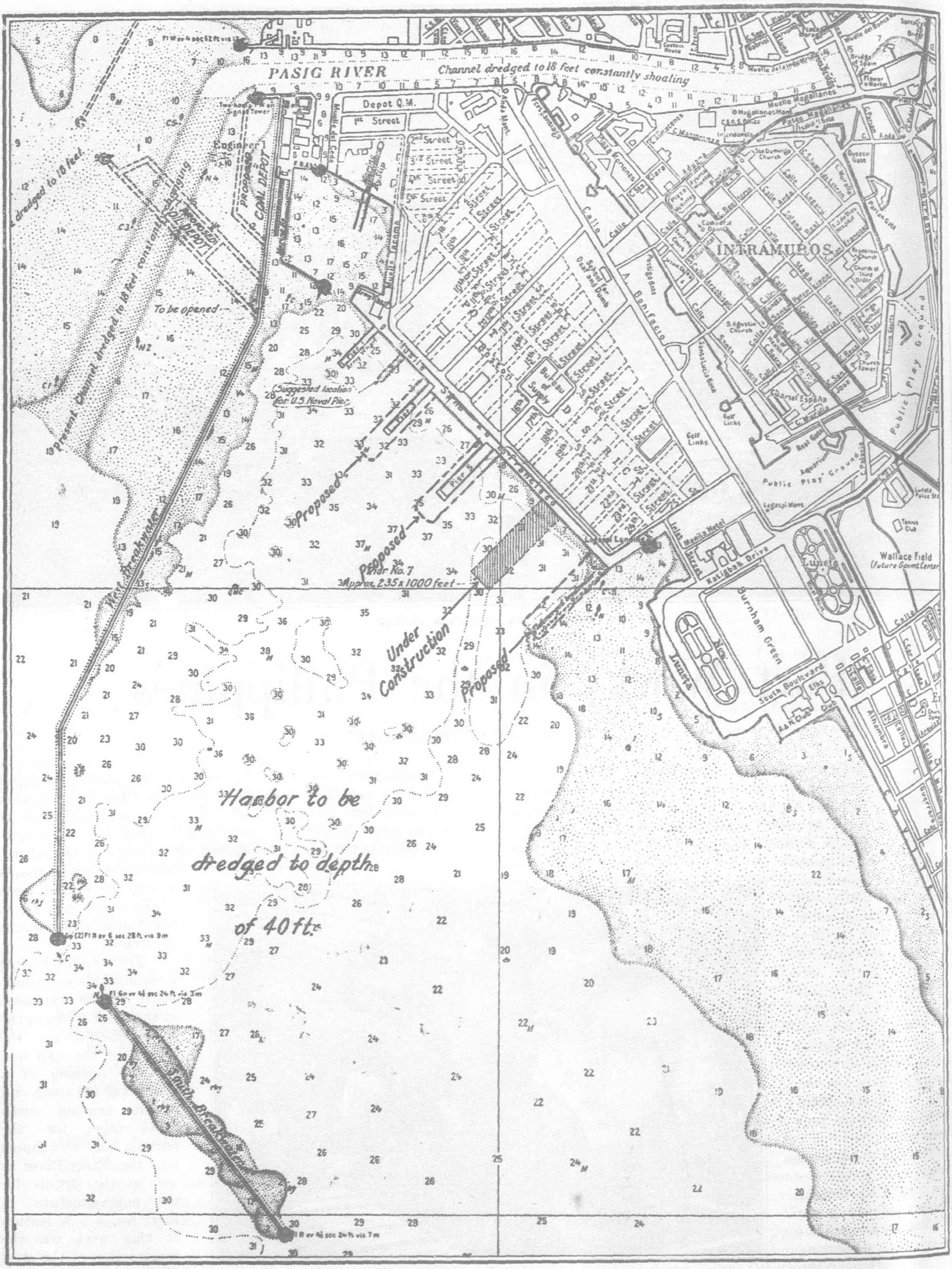
THE month of April 1920 saw the inauguration of the greatest port works program ever launched in the history of the Philippine Islands, due principally to the flotation of a P.10,000,000 bond issue in the United States. The availability of these funds, together with other funds voted by the legislature, placed the bureau of public works in a position to proceed with the preparation of the plans for the various harbor improvements throughout the Islands and considerable work was accomplished by the designing division in this direction as regards plans for the port of Manila and numerous other provincial ports.



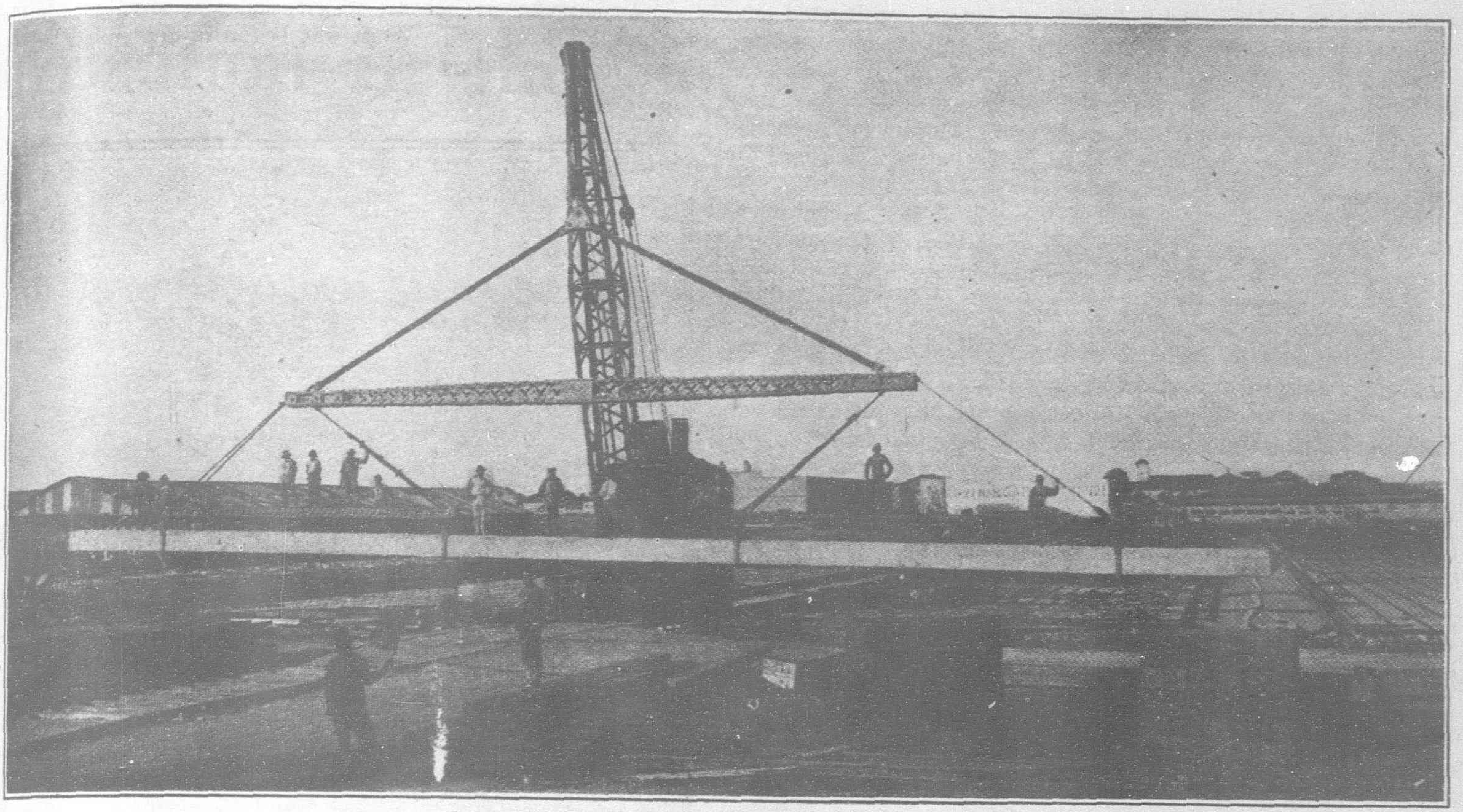
Interior View of Pile Driver "Mammoth," Pier No. 7, Manila, P. I.
This view shows the boiler room and two forward spud engines

Standing foremost among the port projects, for which designs have been prepared, are the Manila harbor improvements, embracing both the south and the north port districts. The designing division of the bureau of public works developed plans for the port district to the north of the Pasig River (known as the North Port District) which will involve an expenditure of approximately P.90,000,000 for carrying the project to completion. Port facilities in the south port district, which will soon be realized, bid fair to place Manila among the leading ports of the world, in so far as the handling of cargo is concerned.

The improvements mentioned above, include plans for the extension of the break-water in the south district, for the closing of the gap and for the opening of a channel at the south end of the existing south break-water; for the opening of a channel into the Pasig River as well as the details for the superstructure of Pier No. 7. A feature of this work was the construction of the steel pile-driver *Mammoth*, which is the largest and



MANILA HARBOR

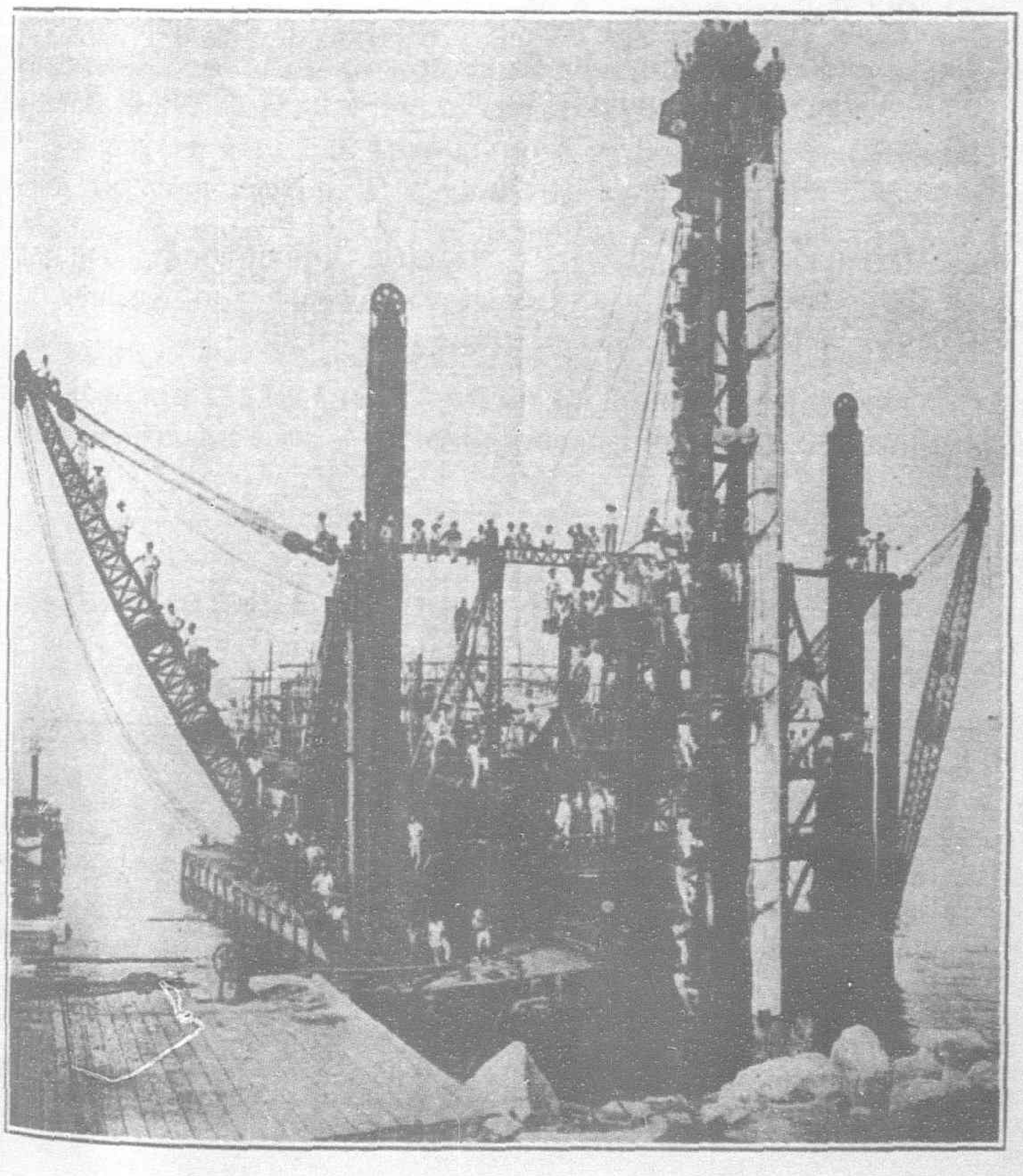


**General View of Pile Crane, Pier No. 7, Manila, P. I.**

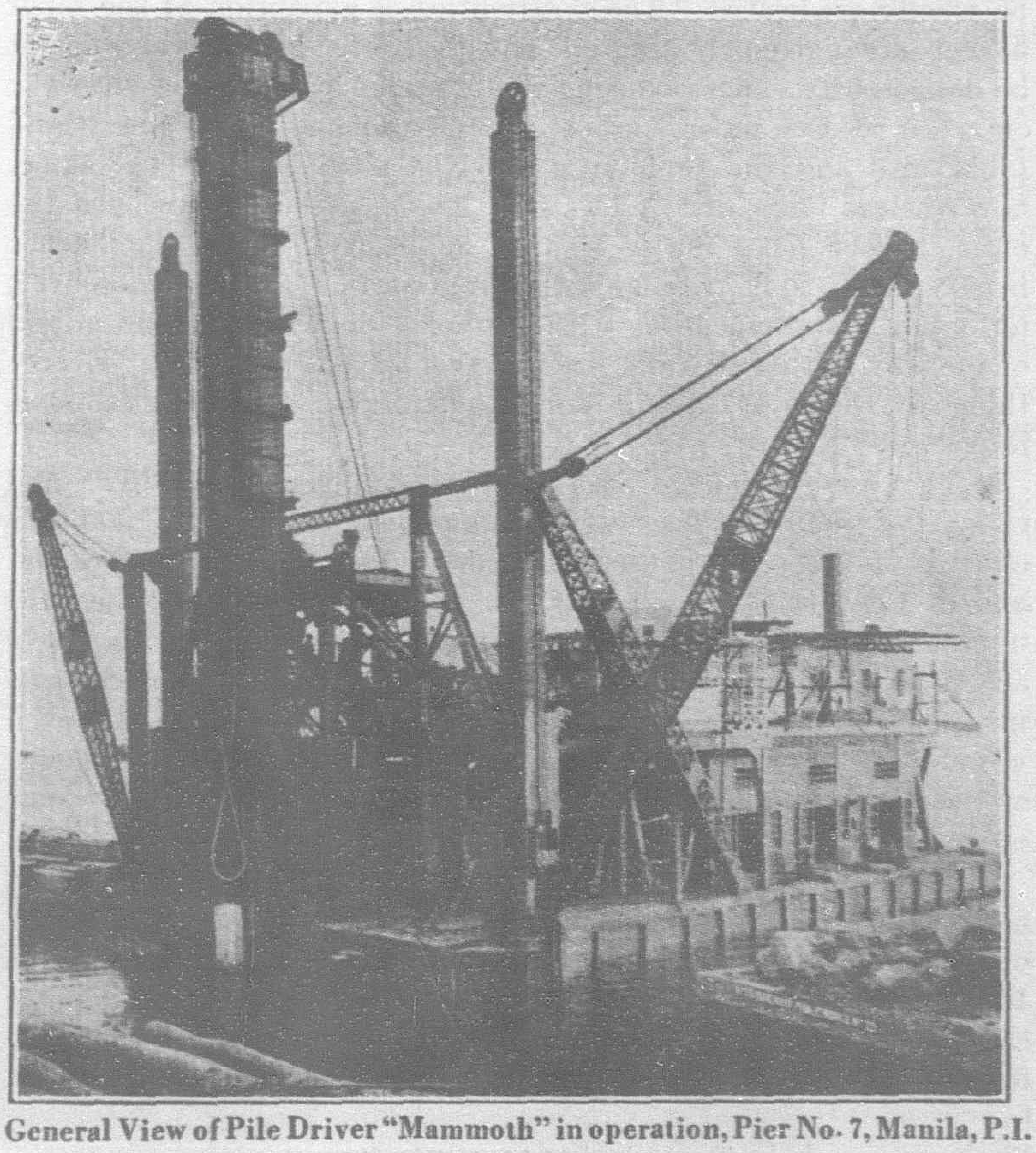
This view shows the Pile Crane steaming towards the Pile Scow carrying a 110-foot Concrete Pile

most modern pile-driver ever constructed anywhere either locally or in the United States. The 1,000-ton hull for this fine piece of equipment was launched late in November. This machine is now driving the 24-inch by 24-inch by 110-foot substructure reinforced concrete piles for Pier No. 7. Its possession places the government in an independent position as regards its ability to construct marine terminal structures of the most modern type. Henceforth, it will be available, for the construction of piers, wharves and sea-walls throughout the archipelago—enabling designs to be executed which were heretofore impossible due to the lack of suitable equipment. The pile-driver was commissioned and commenced driving piles in March 1921.

Very satisfactory progress has been made in the construction of Pier No. 7. This fact can be better appreciated when it is under-



Bird's-eye View of Pile Driver "Mammoth"



**General View of Pile Driver "Mammoth" in operation, Pier No. 7, Manila, P.I.**

This view shows the driver and hammer hoisted just above the pile after completing driving stood that this pier ranks well with the largest constructed anywhere—especially when it is considered that this structure is being constructed so remote from the United States from whence the principal materials and practically all the machinery necessary for carrying on the work must be derived. The splendid progress made has been possible only because of the untiring efforts of the entire engineering personnel connected with the project, who, as a whole, have given unstintedly of their time and strength and co-operated so closely. This close co-operation of the technical personnel connected with this project has enabled the bureau of public works to marshall its forces of skilled mechanics, artisans, carpenters and workers as a whole and to create a smooth working organization of more than a thousand individuals to push the project to conclusion as rapidly as possible.

The most modern engines of construction have been designed, fabricated, brought to the Philippines and commissioned on this project in an incredible short time. One of the finest and largest cranes ever brought to the Philippines was designed and is now being fabricated, and utilized, first in handling the large concrete piles (see illustration) and later, in handling the ships' cargo. It will be possible, upon completion of the pier, by the use of this crane, to discharge single pieces of machinery or ordnance weighing as much as 80 tons—a task which has heretofore required the erection of special equipment each time a large piece of machinery was to be removed from a vessel at Manila.

## Extension of Keelung Harbor Needed

THE principal channel of the import trade of Formosa is Keelung, which is the nearest port to Japan. The harbor as it is to-day is wholly a product of Japanese enterprise, since at the time of the cession of the island by China the inner harbor was too shallow for any but small craft, while the outer harbor is exposed and dangerous during the N.E. monsoon in the winter months. The natural disadvantages of Keelung harbor can, indeed, never be wholly eradicated. The possibilities of expansion of the inner harbor are extremely limited, and the outer harbor cannot but be dangerously exposed during the monsoon period ; moreover the entrance to the inner harbor, though protected by Palm Island (Sharyoto) and the promontory to the southward of the same, nevertheless faces due N.E., while the exposed entrance to the outer harbor faces north, so that in the bad season the harbor is never likely to be popular with shipmasters. There is, moreover, no water communication with Taihoku or with the hinterland of the port, so that all traffic has to travel by rail or by road. Everything is, however, being done to minimise the disadvantages imposed by Nature.

The present harbor works were commenced in 1899 and completed in 1913. They were designed to deal with 250,000 tons of cargo, but recent expansion has rendered the facilities inadequate, and in 1919, the "boom" year, the cargo dealt with reached the unprecedented figure of 850,000 tons. The harbor can properly accommodate four ships of 6,000 tons alongside the pier and seven more of from 3,000 to 8,000 tons moored at buoys, a total of eleven vessels. As many as sixteen vessels have been berthed on occasion at one time, but great congestion has prevailed and stevedorage charges have perforce been high.

The need for extension is obviously great, and Keelung, moreover, possesses no proper facilities for handling coal, the export of which expanded from 11,000 tons in 1913 to 423,000 tons in 1920. The drop in the price of silver has caused a diminution in the export of Formosan coal to the Chinese market, and the figures for 1921 are likely to be considerably smaller than last year's, but it is hoped that economies effected in loading expenses at Keelung may help the industry to regain its prosperity.

A comprehensive scheme of extensions was sanctioned in 1920, to cost Y. 13,560,000. Work was begun in September last, but so far no great progress has been made. This is, however, natural, since the period from October to March is that of the N.E. monsoon, with its consequent rain and boisterous weather at Keelung. The work is expected to be finished in the year 1926.

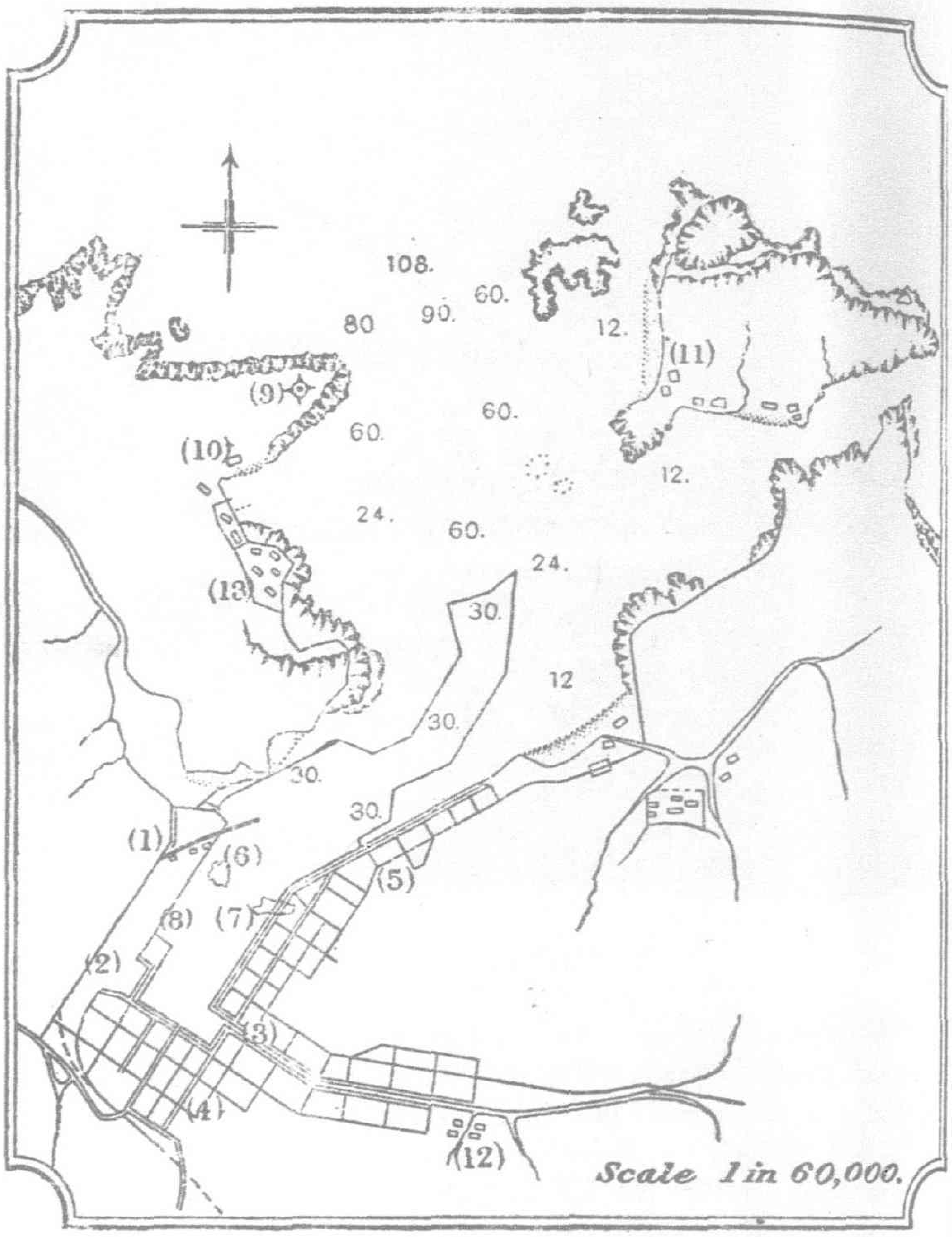


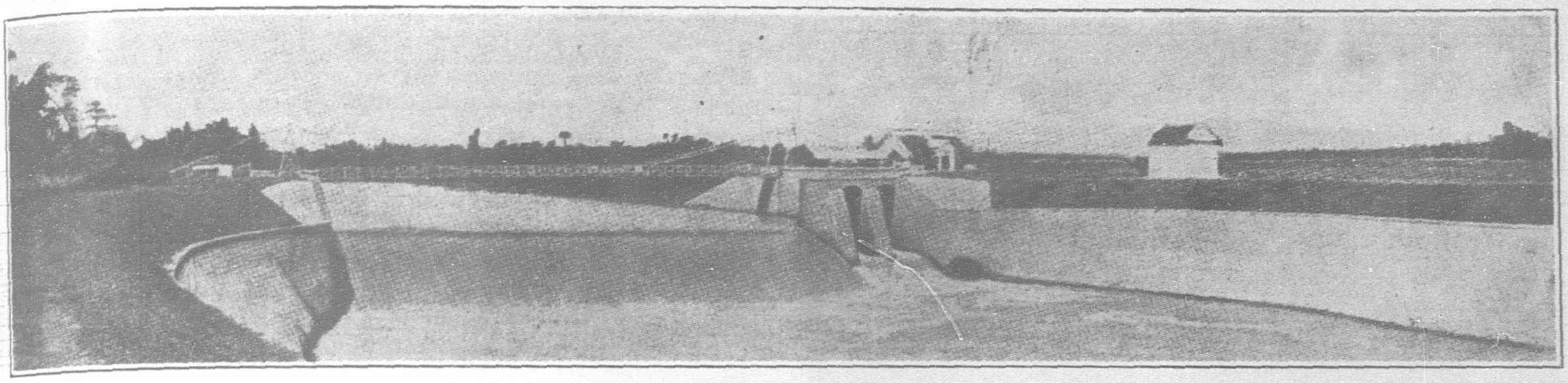
CHART OF KEELUNG HARBOR

1. Old Railway Station; 2. New Railway Station; 3. Gijiu Bashi; 4. Dai-Keelung; 5. Sho-Keelung; 6. Haukan Island; 7. Haubo Island; 8. Quay Wall; 9. Light House; 10. Port Quarantine; 11. Meteorological Station; 12. Denryo Ko; 13. Office of Harbor Works

## Manufacture of a Product Interestingly Disclosed

The manufacturers of "Armco," the American Rolling Mill Company, have sent us a beautifully made up book in which the full process of the manufacture of their products from the time that the rough ore is gathered up from mother earth until it is made into serviceable shape for shipment to the trade is presented. Not only this, there is given a history which is interesting to any who may not be concerned with the iron and steel business, and we find also much that the Company has done in the way of making the lot of the employee more interesting, more pleasant. The book is exceedingly well illustrated and will prove a serviceable adjunct to the working table of any engineer or business man.

# Irrigation in the Netherlands East Indies



Reservoir on the Madioen River

THE growing of Java's principal food crop, rice, in general depends to a great degree upon the arbitrary disposal of a large supply of water.

To provide for this need, the water from the rivers must be used for irrigation. The construction works by means of which the water is drawn from the rivers and distributed over the rice-fields, were originally planned and carried out by the natives themselves. Naturally this could only take place in a primitive way and besides had to be limited to the drawing of water from wells and smaller rivers. Nevertheless, the people have obtained very satisfactory results with the means at their disposal, and even at the present time about 55 per cent. of the rice-fields are watered by means of primitive canals constructed by them on the initiative of their chiefs, of materials with little durability such as bamboo, wood, straw, loose stones, etc.

In the course of time, however, the primitive irrigation works constructed by the people led to many difficulties; their upkeep cost much labor and much material, the canals worked into rivers, while the rivers themselves by alluviation lost a great deal of their transport power and often the irrigation system constructed in this way changed into an inundation. The results obtained from these irrigation works, moreover, do not answer the requirements for the desired rice production of the archipelago.

The government has always more or less promoted irrigation, also by the construction of various works. Since the last quarter of the former century, however, attention has been paid to a more systematic irrigation, which has been taken almost entirely into the hands of the government. Irrigation is now being perfected as much as possible with might and main.

Already in 1885 a special service for irrigation was established. The officials of this service are charged with the study, the projection and construction of new works and the management and maintenance of those already existing. They also pay attention to the improvement of the waterworks of native construction.

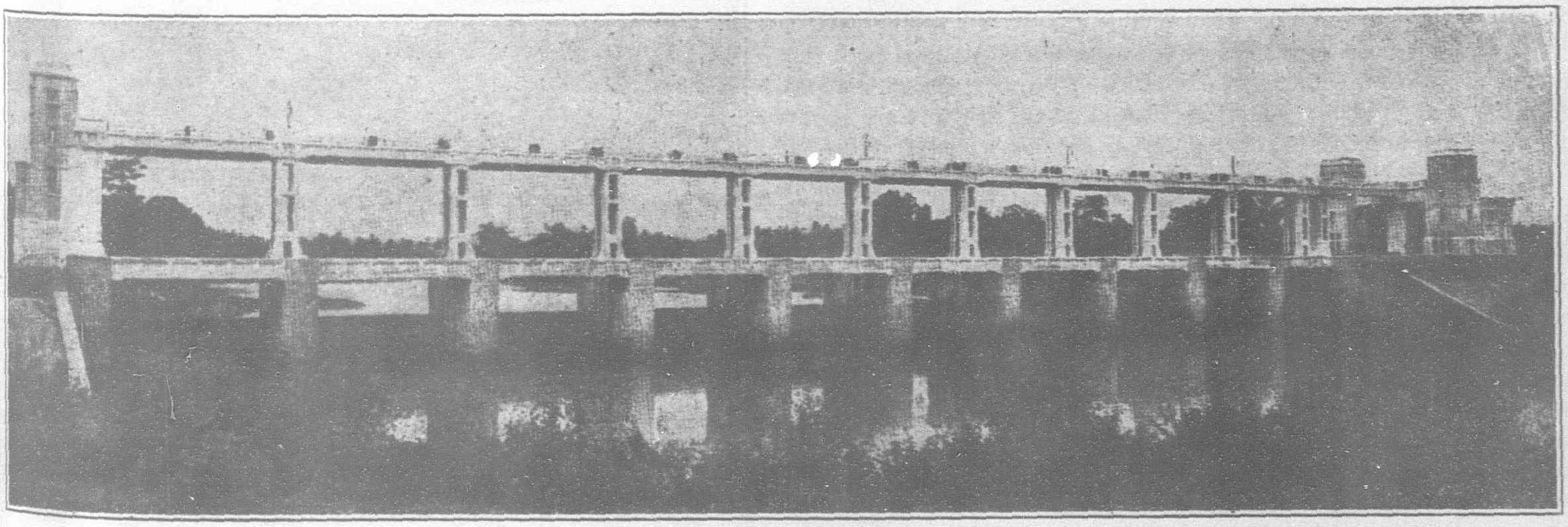
In view of the fact that the people's interest is concerned with the management of the waterworks, the heads of provincial government have the supervision of the management in their residency.

The main regulation of the water is in charge of the technical staff; with the regulation within the main area the staff has nothing to do and it is intended in the future to leave this entirely to the native farmer, whereby only the strictly necessary information will be given by agricultural experts.

This, however, has not yet been possible, so that for the most part that part of the system which has been partly or altogether improved, is still in the hands of the government or of the department of irrigation.

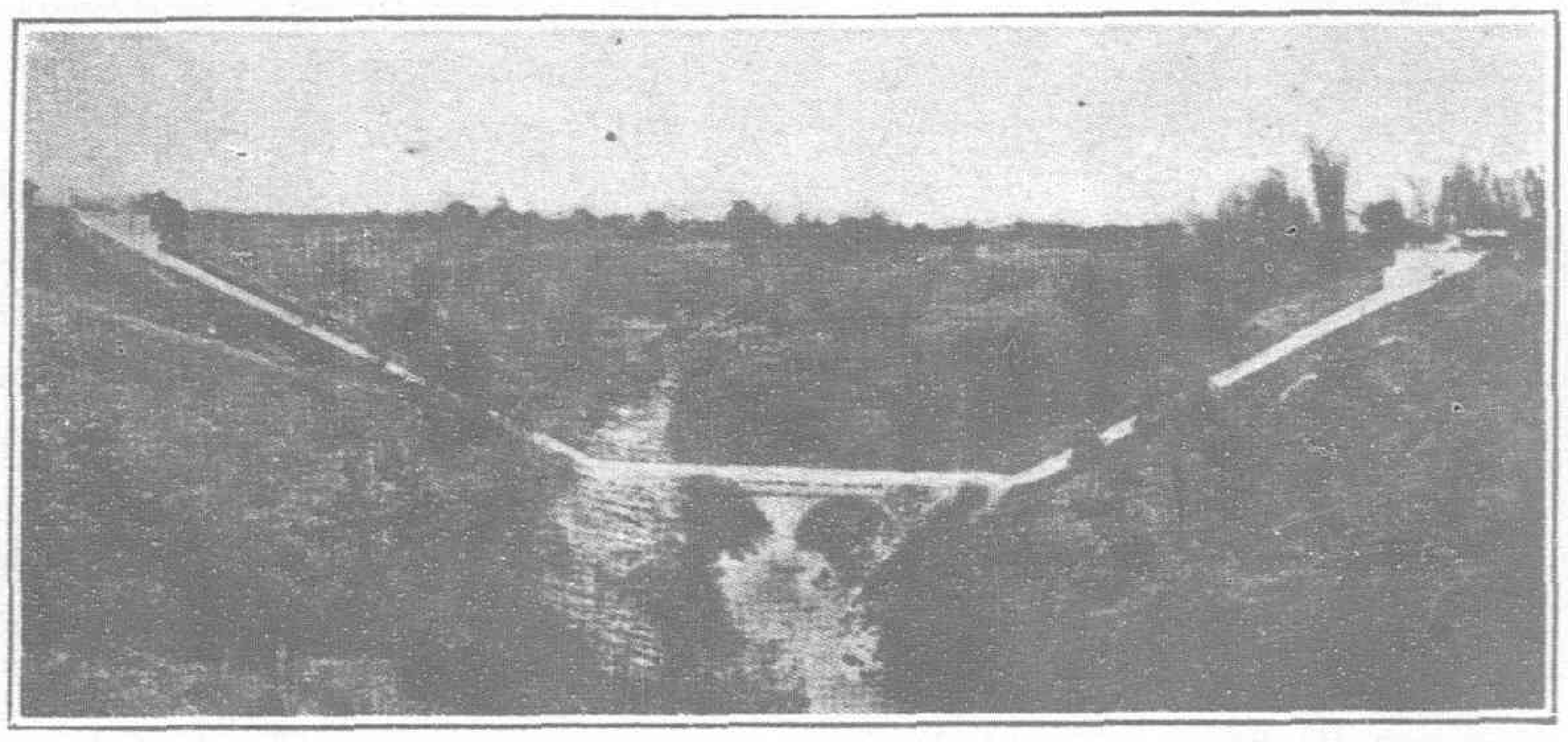
As far as it is possible the flow of water is regulated according to fixed rules, whereby the irrigation keeps place with the quantity of the water supply at a certain time of the year. At the end of 1919 there were seven irrigation sections in Java; where such sections have not yet been established the management for the present is in the hands of the department in charge of the construction of new works.

As soon as the rice-fields which were planted in the west monsoon are no longer in need of water, the supply, in districts where the sugar industry is carried on, is in a large measure free for the sugar-cane fields, which require irrigation only in the east monsoon. During this time, however, the natives use a part of their rice-fields, providing they have not rented them to sugar growers or other estate owners, for a second rice crop, or for the planting of a so-called secondary crop, including such products as maize, pulses, arachides, tobacco, indigo and cotton. In case



Irrigation Reservoir in the Tjibedjoeng River, North Bantam, N.E.I.

there is a scarcity of water the necessary irrigation is often supplied to the natives by observing the so-called day and night system, whereby the owners of the sugar plantations have the water at their disposal during the day and those of secondary crops only during certain hours of the day and at night. By using reservoirs, such as are already in use or in the course of construction in most of the sugar-cane districts, for storing the water at night, it is hoped that before long this system, which has serious disadvantages for the natives, can be abolished and a condition brought about whereby water will be supplied during the day to all who need it during the east monsoon.


Aquaduct over the Metro River

By the improved system of irrigation, not only has the area planted in rice and sugar-cane been extended, but the yield per *bouw* has been increased, especially as averaged over a number of years, due to the fact that failures of crops have been considerably diminished, while the planting of secondary crops has been increased.

In 1919, there were twenty-four important irrigation works in course of construction, while plans were being made for several more. Besides these, a great number of smaller works, improvements and reconstructions are constantly being attended to.

A factor which is also receiving attention, since it is of the greatest importance to all branches of agriculture, is the care for a regular system of drains and dams, so that besides irrigation and drainage, the construction of dams is either being carried out or is being planned.

Except in Bali, irrigation in the outlying possessions is not yet of great importance, though it is increasing.

Some of the works that the natives have constructed in this island are far superior to similar works in Java.

In 1910 the government made an enquiry regarding the existing and the desired irrigation works in Sumatra and Celebes.

The reports written on this enquiry mention, as do those for the south and east divisions of Borneo, a number of districts where the construction of works would be desirable and also profitable, considering the quantity of water available in the river. Several of these works have since been projected and carried out.

In most of the provinces outside Java and Madura civil engineers are now appointed to construct or improve irrigation and drainage works. The authorities, also, in these districts are showing increasing activity in this respect.

The following gives a review of the total area of irrigated land in Java, also of the amounts expended on construction and upkeep during a successive number of years.

Review of Irrigated Land in Java

| | | Hectares | Per cent. |
|---|---|---|---|
| I. | Irrigated areas where permanent works are in use ... ... ... ... | 584,000 | 21 |
| II. | Irrigated areas where permanent works are in course of construction ... | 300,000 | 11 |
| III. | Irrigated areas for which permanent works are either under consideration or in course of preparation | 471,000 | 17 |
| IV. | Irrigated land and land dependent on rain, for which no plans have yet been made ... ... ... ... | 1,400,000 | 51 |

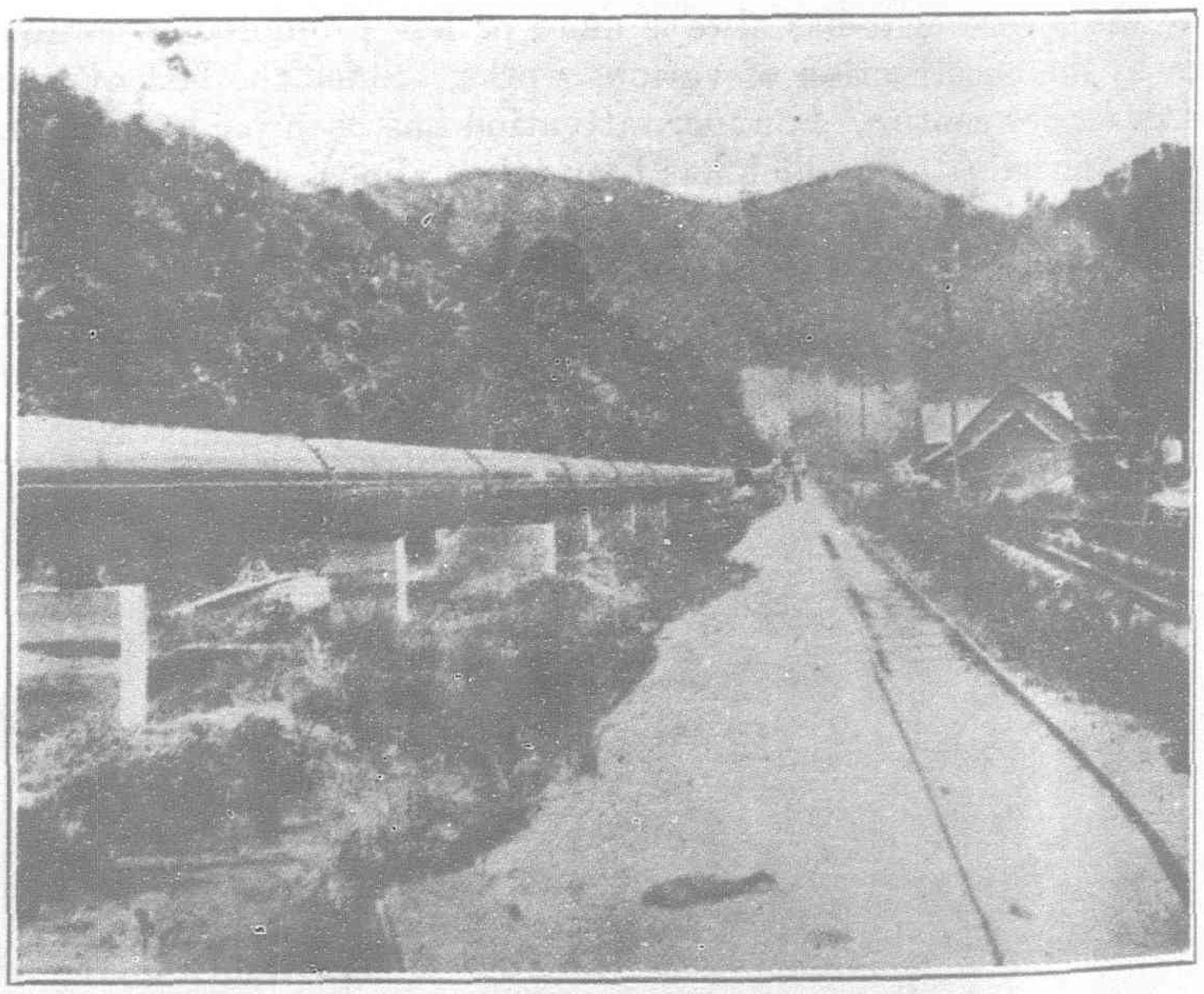
Costs of Irrigation Works

| Year | Total amounts (in guilders) spent on the construction and preparation of irrigation and drainage works | | Repairs and general upkeep |
|---|---|---|---|
| | Java and Madura | Outlying Possessions | |
| 1914... .... | 6,177,802 | 523,734 | 787,231 |
| 1915....... | 4,870,578 | 602,405 | 1,328,798 |
| 1916....... | 5,974,539 | 711,410 | 1,796,168 |
| 1917....... | 7 380,725 | 762,745 | 1,796,998 |
| 1918....... | 9,055,824 | 785,570 | 2,728,103 |

## Straits Tin Position

Mr. F. E. Mair, of the firm of Messrs. Osborne and Chappel, of Ipoh, Perak, managers of a number of British tin-mining companies operating in the Federated Malay States, commenting on the action of the F. M. S. government in buying tin when there was no market for it, said (in a speech reported in the *Mining World*): "During the four years I was in the East they did this on two occasions. When the government decided to buy tin last November or December they fixed a price of $110 a picul, equivalent to £220 per ton. The majority of the more influential Chinese approached the government, and told them it was impossible for them to produce tin at that price at a profit. I may say that the government hardly gave credence to their statement, but at the same time a committee was formed and a close examination made of the books of the representative Chinese mines. It was proved without doubt that the Chinese could not produce tin for $110 a picul at a profit.

"Well, that means 70 per cent. of the output of the Malay States is being produced at a loss, and I do not think the Chinaman, who is a very shrewd business man, is going on doing that indefinitely, and therefore it is more than probable that you will see a big reduction in the output of the Malay States. Gopeng Consolidated and a favored few can produce tin at a profit at the present price, but they are very few. If the present price continues it will mean that numbers of mines will close down ; in fact, I have been advised from the East that many have been already closed since I left."

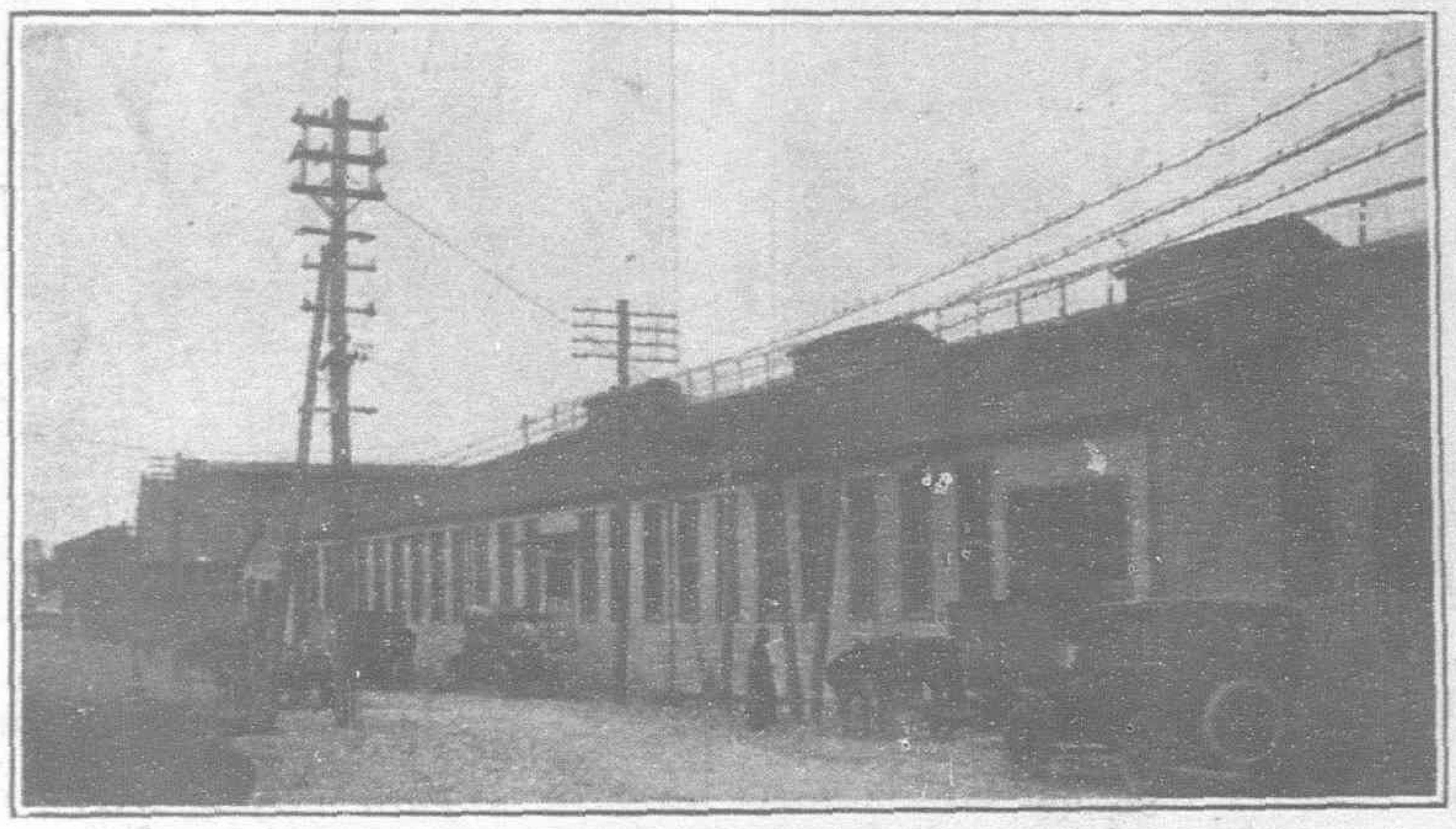

Gopeng Consolidated Tin Mines, F.M.S., 43 inch Pipe Line

This news and the fact that the F.M.S. government is holding its accumulated tin in the hope of selling it at a profit doubtless largely accounts for the recent recovery in the metal, and will permit of the more rapid absorption of the floating supplies of the metal as trade generally revives.

# A Ford Assembly Plant in Japan

A FORD motor car, completely assembled from two hundred pieces, and ready to take the road in Yokohama, just one and one-half hours after it leaves the customs in the Japanese port city,—this is the record of the Negishi assembling plant of Sale and Frazar, Ltd., the most complete and modern Ford assembly plant in the Orient. In progressive stages one may see the Ford passing through the Negishi plant of Sale and Frazar, located at 408 Horinouchi, Nakamura-machi, Negishi, Yokohama. In a big frame building, 148 by 108, the crates containing the Fords are unloaded. The crates arrive at a big unloading platform, direct from the Pacific Ocean docks, to which place they have been carried by a steamer from New York via the Panama Canal.

Once uncrated the Ford is handled by various shifts of workmen in the Negishi plant. The entire place, which has been opened only since July, 1920, is in charge of H. F. Brett, who, before his entrance into automotive work in the Orient, was connected with the Ford plants in the United States. Brett, F. Bennett, E. Strobel and C. K. Caswell form the managing staff at the big Yokohama Ford assembly plant. Bennett was with the Highland Park Ford plant 15 years while Brett served there for seven years. Both speak of the similarity between Henry Ford and E. W. Frazar, their present chief. Frazar, who has, by his importing and exporting business in the Orient, built up huge interests in Japan, is a fairly tall, grey-haired, forceful appearing man. He makes frequent visits to all of the Sale and Frazar interests in Yokohama and Tokyo, "dropping in on us," so the men at the Negishi plant say, "much the same Henry Ford did in the U. S. A." The men who work for E. W. Frazar seem to take the same personal interest in his undertaking as the men who work in the Ford works in the United States are said to do. It has been a great source of pride to all of the men connected with Sale and Frazar to watch the growth of the Ford branch of the Sale and Frazar work, and, since the opening of the Negishi plant, the only one that can be said to be a real assembly plant in the Orient, frequent visitors interested in automobile business, have been taken out to Negishi, for a look.



Exterior View of the Assembly Plant at Negishi, Yokohama

### Other Ford Products

The head of the Sale and Frazar interests in Japan, and in the Orient, is able to branch out in many ways. In the 15 acres that takes care of his interests at Negishi, he has a Ford assembly plant, a Fordson tractor demonstration grounds, with tractor drawn agricultural implements ; he has a big storehouse for Ford parts, and a lumber mill.

But, to return to the trip of the Ford, from the 200 piece stage to the place of a first-rate looking Ford touring car. Ceiling chains, and lifts hoist the body out of the big box. The box which the Ford comes in weighs 2,349 pounds. It is 9 feet 2 inches long, its width is 4-ft. 8-in., and its height 3-ft. 9-in. Once the parts have been lifted from the big box the work on the rails on one side of the plant may begin. There are crews of men to handle each stage of the assembling of the Ford. This is a great departure from the way the work was handled a few years ago. The frame, the rear springs, the running boards brackets,—all come in order, as the visitor to the Ford assembly plant sees the little touring car grow from a jumbled bunch of pieces into a real modern Henry car.

### The First Passenger

The work of assembly proceeds, the car, as it is added to, passing up the line, slid on two rails very much like railroad tracks. The control shaft, the front axle assembly,—the latter done in a separate corner by itself,—the rear axle and differential assembly, the work of putting the rear axle on the frame, about this time this one may begin to see the end of the Ford's trip through Mr. Frazar's assembly plant. The motor has previously been tested, and is in the car. The dash assembly, horn, coils, steering control are put in and then come the wheels, fuel tank, and finally the body assembly. This last step is done by a boy who, perched in the body, on a chain, gradually is lowered on to the frame of the car. The boy in the Negishi plant thus enjoys the first ride in the new Ford, as some of his companions are always glad to give him a shove along, right up to the point where the Ford, under its own power, may soon be driven out into the yards of the plant for a waiting purchaser.

### Six Cars Possible Daily

The most recent shipment of new Fords came from New York, by way of the Panama Canal, on the *Choyo Maru*. Some time is frequently taken in getting the cars through the customs, but, leaving this matter out of the consideration, it is remarkable how quickly a Ford can be put together. The present plant represents not only the most complete assembly works but the greatest attempt for speed in assembly that has yet been made in the Orient. The work of the Sale and Frazar Ford agency, in assembling, was carried out in the past at the Sale and Frazar Shops, No. 83 Main Street. But that section of the Sale and Frazar property in Yokohama has been entirely turned over to the assembly of other cars now, the Ford being the king at the Negishi works.

Formally, six cars per day may be assembled at the Negishi plant, the greatest outpost of Ford efficiency in the Orient. Last month was a busy season, and the workers at the Negishi institution were kept at it one of the fatest rates yet made necessary at the new plant.

It is a model scene of American industry, this Negishi plant of the Ford outpost. Here the famous American motor car, one hour and thirty minutes in Japan, may be run out, and into the Japanese highway, ready for years of service to the Japanese owner, who, by the way, is as strong a booster of the Ford automobile as the most enthusiastic Ford owner in the United States.

In a country where there are so many beautiful roads, most of which are accessible to motor cars, it will be strange if the business in cars does not increase in rapid fashion. Unlike China where there are but few motor roads, except in the treaty ports where the motorist has really very little scope for much riding, Japan offers much to the car owner and the Japanese are never slow in accepting of opportunities for the enjoyment of a scenic beauty. The Ford assembly plant such as is described above no doubt fills an important place in the development of the motor car business. It is not difficult to foresee the advantages thus offered to a growing industry and to realize its importance in the future.

## THE ORIENT'S BIGGEST FORD ASSEMBLY PLANT

**New ideas in efficient assembling of Ford Motor Cars were introduced to the Orient when Sale and Frazar, Ltd., opened their modern Ford Assembly Plant at Negishi, Yokohama, last year. The Plant is operating normally now, the output daily, when necessary, being six cars. It is estimated that a shipment of Fords may arrive in crates at Yokohama, and counting time out for Customs troubles, a Ford may be taken from the boat, uncrated, and be set up ready for the road in two or three hours.**

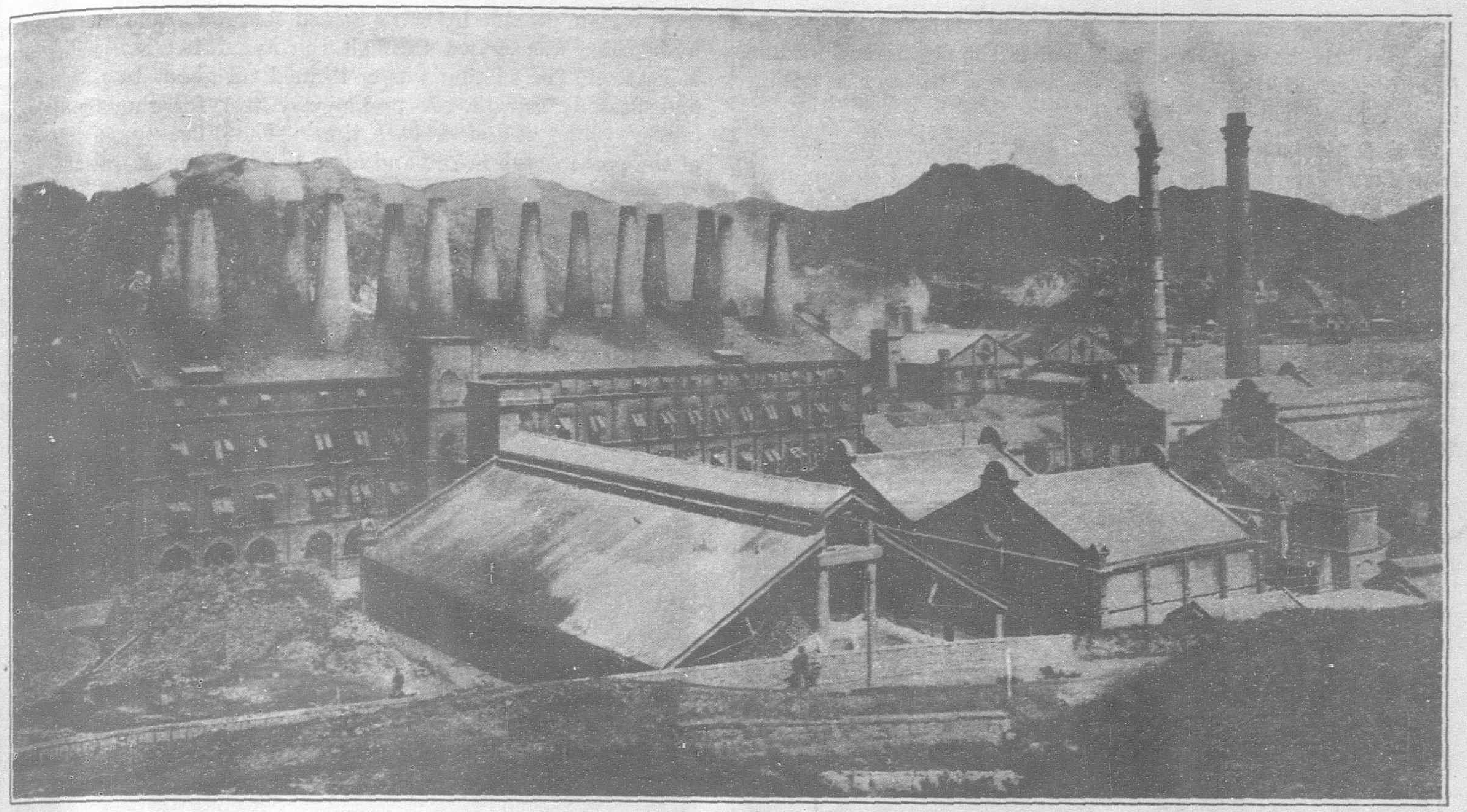
# Industrial Bank of Japan

The second half of 1920 witnessed a contraction in the volume of business passing in Japan as the result of the economic disturbances of the first part of the year. Prices of grain and other staple commodities declined and stocks continued to pile up in the warehouses. Efforts were made to relieve business in certain directions, but without success in consequence of the public's incapacity or disinclination to buy. The Industrial Bank of Japan, by reason of its business connections and a great demand for capital, added substantially to its gross earnings, but as hitherto has been the case, the directors concentrated upon strengthening the position of the institution, the need for which was made more urgent by reason of the unsettled conditions. The following table gives the results for the past three half-years :—

| | Half-year ended | | |
|---|---|---|---|
| | 31st Dec., 1919. | 30th June, 1920. | 31st Dec., 1920. |
| | Yen. | Yen. | Yen. |
| Net profit ... ... ... | *4,016,800 | 1,822,000 | 2,672,200 |
| Dividend p.a. ... ... | 7% | 8% | 8% |
| Carry forward ... ... | 85,400 | 88,100 | 510,300 |
| Capital paid up ... ... | 35,000,000 | 44,792,500 | 45,000,000 |
| Debentures issued ... | 232,6 3,300 | 260,123,000 | 307,494,100 |
| Reserve ... ... ... | 5,971,800 | 6,124,800 | 6,374,800 |
| Deposits ... ... ... | 44,975,700 | 39,842,600 | 34,306,900 |
| Trust funds ... ... | 40,468,100 | 46,304,200 | 31,279,800 |
| Cash ... ... ... | 4,579,800 | 5,687,600 | 3,252,800 |
| Advances . ... ... | 1,241,200 | 997,000 | 1,074,800 |
| Loans ... ... ... | 179,768,900 | 181,866,800 | 192,564,600 |
| Bills discounted ... ... | 87,546,900 | 156,231,900 | 206,243,300 |
| Foreign bills ... ... | 7,150,300 | 9,107,000 | 2,633,000 |
| Bills bearing interest ... | 276,900 | 3,517,800 | 2,305,900 |
| Investments ... ... | 55,969,700 | 58,489,500 | 49,407,100 |
| Total assets ... ... | 407,508,000 | 486,095,200 | 517,073,600 |

*** Including Y. 2,728,500 premiums on new shares.**

After allowing fully for depreciation charges, the gross earnings for the six months amounted to Y. 19,823,400, against which gross expenses were Y. 17,151,200, leaving net earnings of Y. 2,672,200, against Y. 1,822,000 for the first half of 1920. The dividend payment was maintained at 8 per cent., the remaining profits being allocated to reserves.



View of Green Island Portland Cement Works, Showing the Aalborg Kilns

# A Chemical Study of Chinese Portland Cement and Local Raw Materials

### A Thesis Presented to the Faculty of Soochow University in Partial Fulfilment of the Requirements for the Degree of Master of Arts, by C. H. Zee, B.S.

## PART II

THE essential elements of Portland cement—lime, silica, iron and alumina—are all extremely abundant. In fact they are the four most common elements of the earth's crust. Therefore the raw materials that are theoretically available for cement manufacture are almost infinite in number. But under existing commercial conditions, many things other than chemical composition have to be taken into account, and only a comparatively few combinations are actually used. The chief combinations of raw materials now used may be grouped under four heads: (1) Cement rock in which the four essential constituents exist in so nearly the proper proportions that only a small amount of othe1 substance is required to be added in to make the mixture of correct composition; (2) limestone and clay, the former furnishing lime, and the latter furnishing silica, alumina and iron oxide; (3) marl and clay; (4) blast-furnace slag and limestone.

Of the four groups, cement rock was extensively used in the earlier years. But recently with the improvement of the grinding machinery, a very large proportion of the world's output is made from mixtures of limestone and clay. For example, in 1914, 56.9 per cent. of the American output was of this type. That made from cement rock ranked next, with 28.2 per cent. Here in China, cement rock is reported to have been found in Mohkanshan and many other localities, but limestone and clay are certainly more abundant. Two samples of limestone and one sample of clay were obtained from West Dung-Ding Hill. Chemical analyses were made to determine their percentage compositions. Below are given the methods used and the results obtained.

### 1. Limestone *

1. *Determination of the Insoluble Residue.*—Sample 2 is distinguished from sample 1 by having a darker color, and being very much harder. A number of small pieces, fairly representing the material, were selected, finely powdered, and passed through a 100-mesh sieve. About 5 grams of the material were then weighed out from a stoppered weighing bottle, and dissolved in an excess of dilute hydrochloric acid. The solution was evaporated to dryness and the mass treated with water and hydrochloric acid. Sample 1 left a very small amount of silicious residue which was filtered, washed, ignited and weighed. Sample 2 left a larger amount of residue with a dark color. It was filtered on a weighed filter, dried and weighed. Then the filter with the residue was burned in a platinum crucible, ignited and weighed. The residue was further treated with a mixture of hydrofluoric and sulfuric acids, evaporated to dryness, ignited and weighed again. The decrease in weight represents the weight of silicon dioxide present in the residue.

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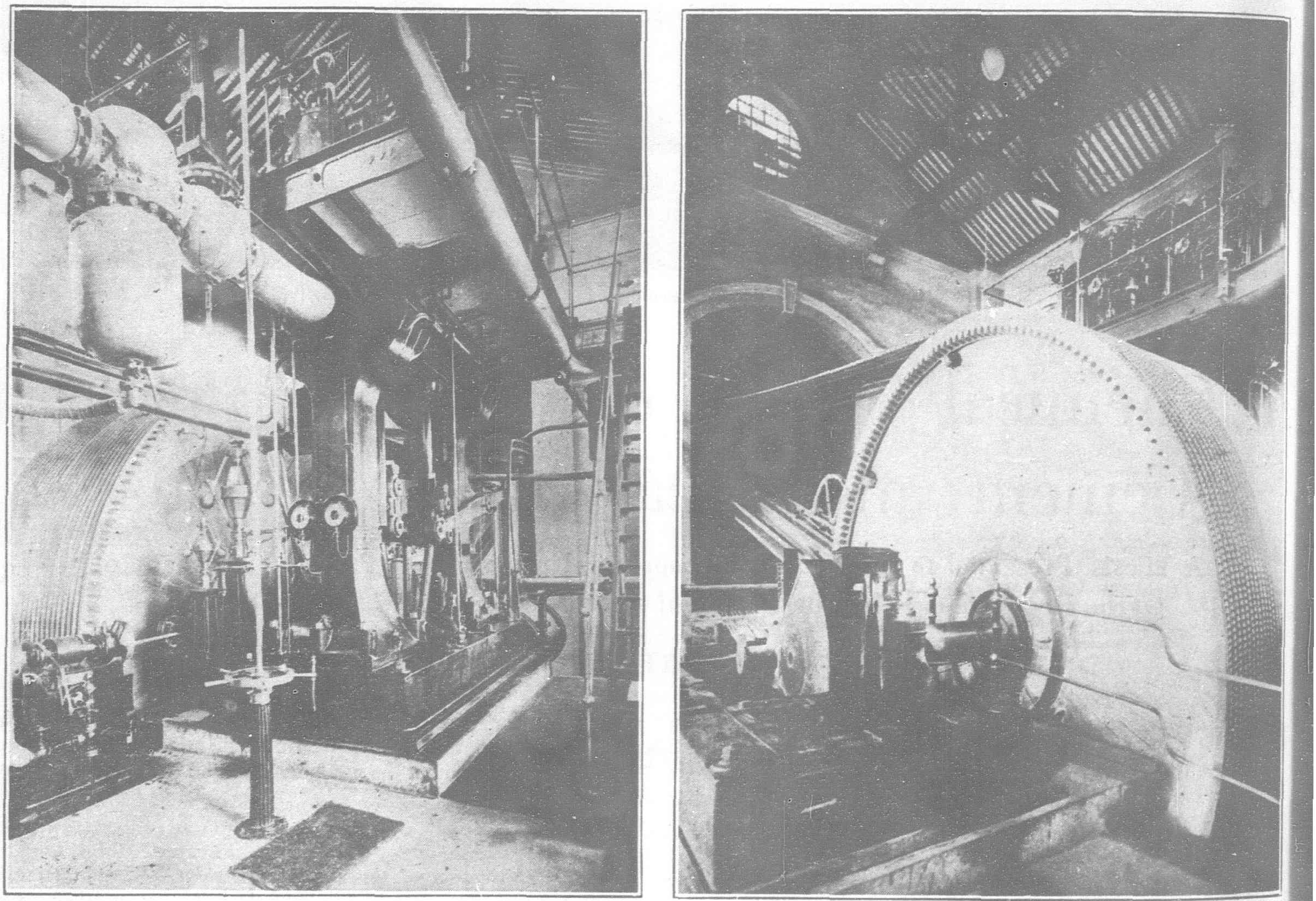
* The methods of analysis are adapted from Evan's "Quantitative Chemical Analysis." Page 70 ff.

2. *Determination of Iron Oxide and Alumina,* $Fe_2O_3$ *and* $Al_2O_3$.—This determination was made in the filtrate and washings from the insoluble matter. The method was the same as outlined in the cement analysis (Page 598).

3. *Determination of Magnesia,* $MgO$.—Calcium was removed* from the filtrate from the determination of iron and aluminium by means of ammonium carbonate and ammonium oxalate, and magnesium was then determined, using the methods of B. Schmitz outlined above (Page 598).

4. *Determination of Carbon Dioxide,* $CO_2$.—The carbonate was decomposed by dilute hydrochloric acid in a flask which joined to a weighed potash bulb attached to a drying tube. Before reaching the potash tube the gas passed through four U-tubes, the first filled with concentrated sulfuric acid, the second with pumice stone, and the last two with calcium chloride. The potash bulb was half filled with a 50 per cent. solution of potassium hydroxide, and its dry-tube was protected by another calcium chloride tube. The sulfuric acid in the first U-tube removed most of the moisture, while the calcium chloride tubes removed the rest. The pumice stone was previously soaked in a saturated solution of copper sulfate, and then dried at 150° C. Its function was to absorb any traces of hydrochloric acid carried over. So the carbon dioxide gas evolved was, after purification, completely absorbed by the potassium hydroxide solution, while any moisture carried off from it was absorbed by its drying tube. The last drying tube prevented any backward diffusion of moisture from the aspirator bottle or outside air. When nearly all the carbonate was dissolved, the flask was heated nearly to boiling, and a current of air, freed from carbon dioxide by being passed through a solution of sodium hydroxide, was drawn through the apparatus by means of an aspirator. The suction was continued till about two liters of air had passed through. A preliminary test for the air tightness of the system was made each time. The difference in the weight of the potash bulb before and after the experiment was the weight of the carbon dioxide absorbed.

5. *Determination of Calcium Oxide or Lime,* $CaO$.—The hydrochloric acid solution was washed out from the flask used in the carbon dioxide determination into a beaker, and made alkaline with a slight excess of ammonium hydroxide. It was then boiled and filtered into a 500 cc. flask, diluted to the mark, and 100 cc. was drawn out at one time. The calcium was precipitated as the oxalate and determined volumetrically as outlined in the cement analysis (Page 598).



GREEN ISLAND CEMENT WORKS

1,000 H.P. Triangular Connecting Rod Type, made by John Musgrave and Sons

Rope Drum of 1,000 H.P. Engine

6. *Determination of Moisture.*—About a gram of the sample was used. It was kept at a temperature of about 150° C., until the weight remained constant.

## 2. Clay †

The sample was finely powdered, passed through a 100-mes sieve and thoroughly dried at 100° C.

1. *Determination of Silica,* $SiO_2$.—About 0.2 grams of th sample was weighed out from a stoppered weighing bottle into a beaker, in which it was treated with a mixture of 10 cc. of concen

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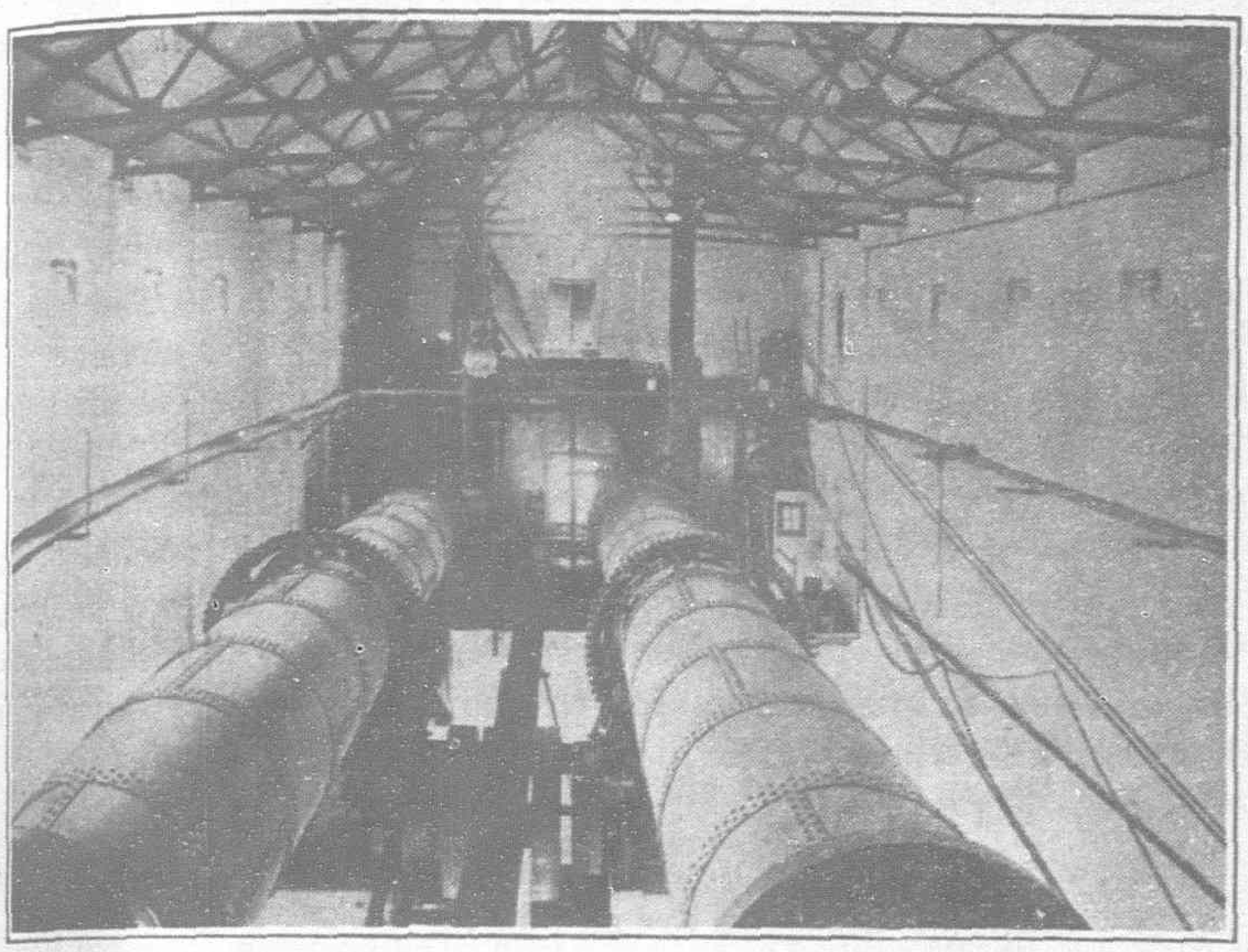
*Calcium was not determined in this connection, because the quantit present was too large.

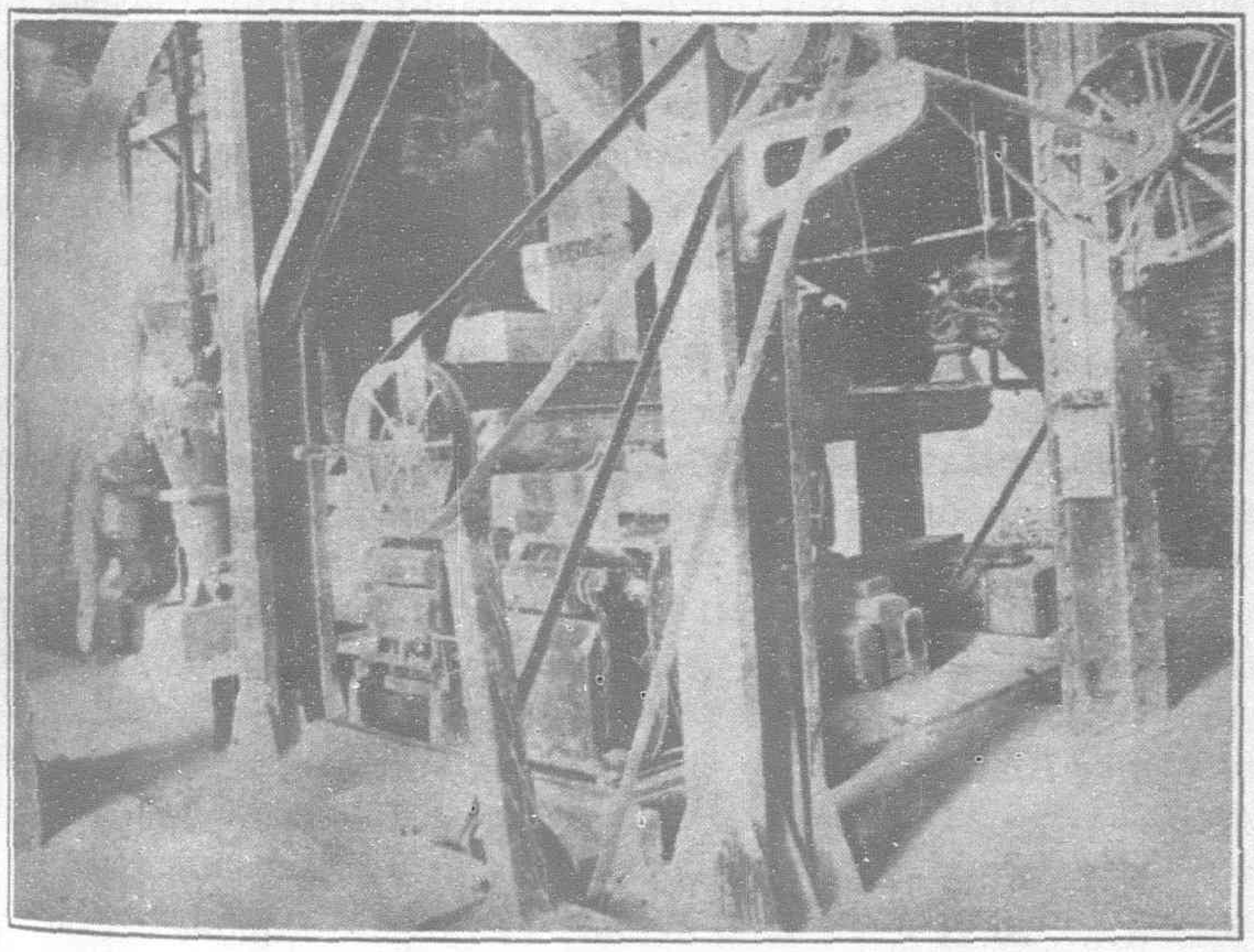
†The methods are mainly taken from laboratory instruction notes.

trated sulfuric acid and 5 cc. of concentrated nitric acid,* and boiled for a few minutes. After cooling, about 70 cc. of water were added, and the solution again cooled. When the undissolved material had settled, the supernatant liquid was filtered off and the process repeated using the residue. The final residue was washed

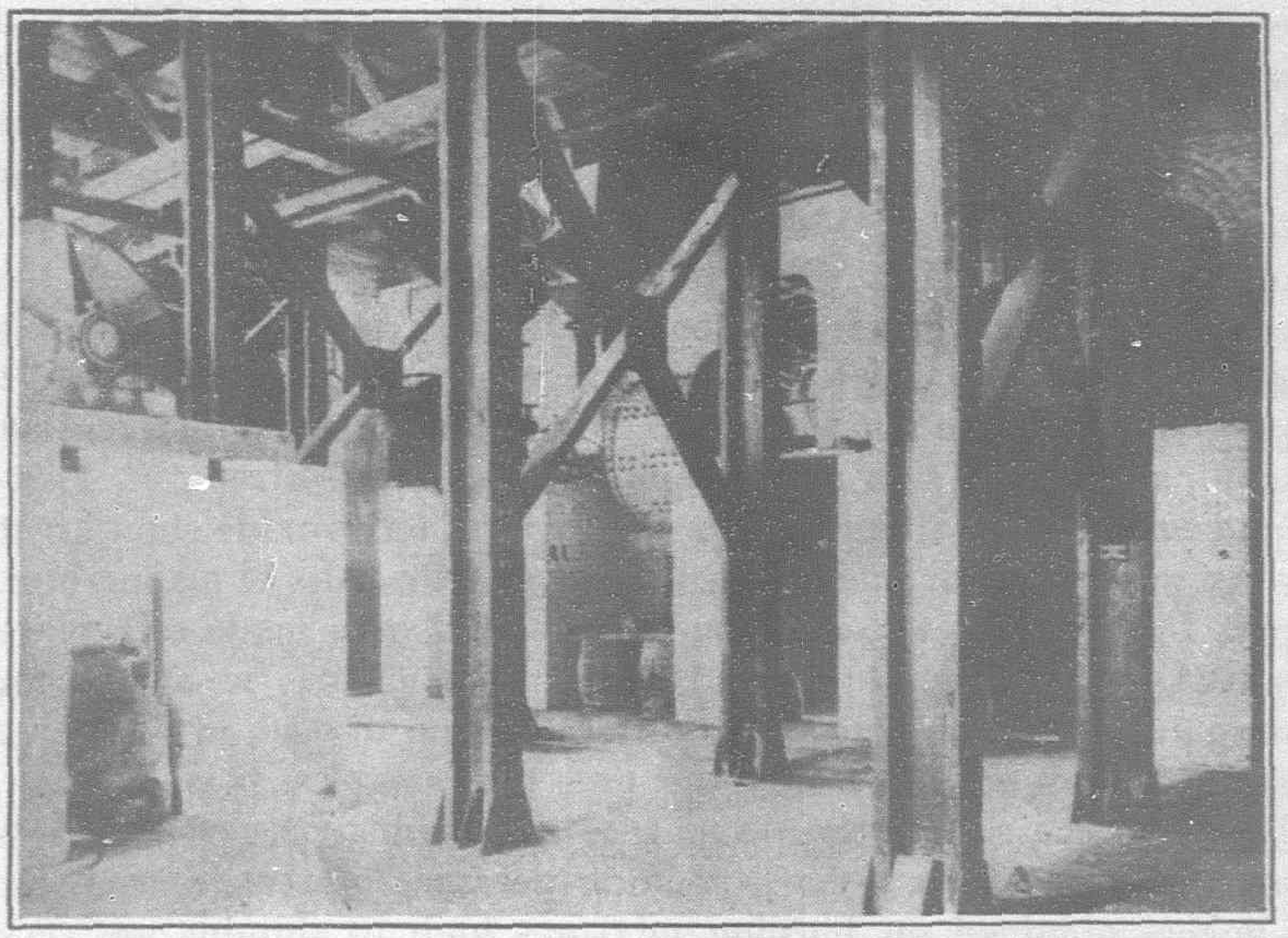


Green Island Cement Works: Rotary Kilns, 85′ × 7½′

with cold water. Allowing the diluted solutions to stand over the residues was avoided, as the silica in this condition is somewhat soluble in the dilute acid on long standing. The final residue was washed into an evaporating dish, acidified with hydrochloric acid and dehydrated. The procedure then followed was the same as in the cement analysis (Page 598). But after the precipitate had been ignited to constant weight, it was treated in the crucible with hydrofluoric acid and a few drops of concentrated sulfuric acid, evaporated to dryness, ignited and weighed again. This treatment was repeated until a constant weight was again reached. The difference between the two weights, before and after the treatment with hydrofluoric acid, was the silica, which was driven off as silicon tetrafluoride.



Green Island Cement Works: Interior of Mill



Cement Mill

2. *Determination of Iron Oxide and Alumina.*—The residue left over after volatilizing the silica in the above determination was treated with dilute hydrochloric acid, and washed into the filtrate from silica. The filtrate was brought to a boil and the iron and aluminium precipitated by ammonium hydroxide. The precipitate was dissolved and reprecipitated to free it from the salts of calcium, magnesium and the alkalies. The precipitate was again dissolved in dilute hydrochloric acid, and diluted to 300 cc. One hundred cc. of the solution were drawn out, the iron and aluminium were precipitated by ammonium hydroxide, washed, dried and ignited to constant weight. It was weighed as the oxides.

3. *Determination of Iron Oxide, $Fe_2O_3$.*—One hundred and fifty cc. of the solution mentioned in the last paragraph were used. The method used was the same as outlined in the cement analysis (Page 598). The percentage of alumina was obtained by difference.

4. *Determination of Calcium Oxide or Lime, $CaO$.*—Calcium was precipitated from the filtrate of iron and aluminium determination as the oxalate by the method as in the cement analysis (Page 598).

5. But the quantity here was comparatively small and the gravimetrical method was preferred. The oxalate was thoroughly washed, dried and ignited strongly over the blast lamp at the highest temperature to constant weight. It was weighed as the oxide.

6. *Determination of Magnesia, $MgO$.*—The method of B. Schmitz was used as outlined in the cement analysis. (Page 598).

7. *Determination of the Alkalies.*—In making this determination two grams of clay were used. The silica was volatilized by repeated treatment with hydrofluoric acids. The residue was dissolved in hot water plus a little hydrochloric acid, and diluted to 400 cc. with hot water. The aluminium was precipitated from the hot solution by adding an excess of barium hydroxide and boiling a few minutes. The precipitate was washed into 400 cc. water, boiled, filtered and washed. The two filtrates were united and evaporated to dryness. The residue having been dissolved with a little water and heated to boiling, the barium was precipitated by adding an excess of ammonium oxalate. The solution was filtered into an evaporating dish, evaporated to dryness, and heated to a dull redness. Then it was dissolved in a few cc. of water and filtered into a weighed crucible. After evaporating very low, a few drops of hydrochloric acid were added and evaporated to dryness. It was then heated to low redness, cooled and weighed as potassium chloride plus sodium chloride.

8. *Determination of Ignition Loss.*—About half a gram of clay was ignited at a bright red heat to constant weight. The loss was calculated as the ignition loss.

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*The acid method of attack was used instead of the fusion methods, because of its comparative rapidity, and also because of lack of large platinum crucibles. Where calcium salts are present in small quantities, the acid method is generally satisfactory.

Below is given a record of the results obtained in these analyses.

LIMESTONE NO. 1.

|  | CaO | $CO_2$ | $SiO_2$ | $Fe_2O_3$ & $Al_2O_3$ | MgO | Moisture |
|---|---|---|---|---|---|---|
| 1. | 55.93 | 43.46 | 0.049 | 0.0613 | 0.127 | 0.208 |
| 2. | 55.88 | 44.14 | 0.049 | 0.0542 | 0.157 | 0.196 |
| 3. | 55.90 | 43.93 | 0.053 | 0.0560 | 0.114 |  |
| 4. | 55.62 | 44.22 | 0.059 | 0.0679 | 0.142 |  |
| 5. | 55.99 | 43.46 |  |  |  |  |
| 6. |  | 43.55 |  |  |  |  |
| Average | 55.86 | 43.78 | 0.052 | 0.0598 | 0.135 | 0.202 |

LIMESTONE NO. 2.

|  | CaO | $CO_2$ | Insoluble* residue | $SiO_2$* | $Fe_2O_3$ & $Al_2O_3$ | MgO | Moisture |
|---|---|---|---|---|---|---|---|
| 1. | 56.15 | 43.49 | 0.171 | 0.0789 | 0.0851 | 0.146 | 0.0860 |
| 2. | 55.93 | 43.62 | 0.158 | 0.0783 | 0.0752 | 0.154 | 0.0845 |
| 3. | 55.97 | 43 59 | 0.159 |  | 0.0906 | 0.161 |  |
| 4. | 56.40 | 43.44 | 0.168 |  | 0.0964 | 0.142 |  |
| 5. | 56.14 |  |  |  |  |  |  |
| Average | 56.12 | 43.54 | 0.164 | 0.0786 | 0.0818 | 0.151 | 0.0852 |

CLAY.

|  | $SiO_2$ | $Fe_2O_3$ | $Al_2O_3$ | CaO | MgO | NaCl & KCl | Ignition loss |
|---|---|---|---|---|---|---|---|
| 1. | 49.03 | 8.76 | 18.90 | 7.21 | 1 02 | 4.92 | 13.87 |
| 2. | 48.93 | 9.00 | 18.84 | 7.05 | 1.06 | 4.82 | 13.45 |
| 3. | 49.07 | 8.70 | 18.68 | 7.38 | 1.20 |  | 13.53 |
| 4. | 48.99 |  |  |  |  |  |  |
| 5. | 49.02 |  |  |  |  |  |  |
| 6. | 49.00 |  |  |  |  |  |  |
| Average | 49.01 | 8.85 | 18.81 | 7.18 | 1.09 | 4.87 | 13.62 |

## 9. Conclusions

*Cements.*—The standard specifications limit the amount of magnesia that may be present in cement to 3.5 per cent. and of sulfuric anhydride to 1.75 per cent. These two substances in each of the three samples analyzed fall within the limits. No. 2 has a contrast with No. 3 in that it contains a higher percentage of lime and a lower percentage of silica. Up to a certain limit it may be said that the more lime there is present, the greater will be the strength of the cement. High lime cements are usually very slow-setting, but they harden rapidly, sometimes reaching their maximum strength in twenty-eight days. But when too much lime is present the cement will fail when tested for soundness. However in a sample such as No. 2, in which the percentage of alumina is so low, 62.71 per cent. of lime is not too much. High silica cements, on the other hand, are usually slow-setting and of good tensile strength. Portland cements containing high percentages of ferric oxide show great resistance to the disintegrating influence of the salts of magnesium, etc., found in sea water. Iron oxide can also be made to replace a part of the alumina with advantage, particularly as a cure for unsoundness. The percentage of ferric oxide in each of the three samples analyzed, especially the first two samples, is quite high. But with the rise of the percentage of alumina, the cement sets more quickly, with a corresponding decrease of tensile strength. Clinkers obtained on burning mixtures high in alumina are very fusible, hard to burn uniformly, and difficult to grind. The percentages of alumina in the cements analyzed are not high, the maximum limit being 10 per cent. As a whole, these samples of cement which we have studied are quite satisfactory in chemical composition.

## Raw Materials

*Limestones.*—As to the raw materials we have studied, the two samples of limestone, though differing widely in color and hardness, are very similar in chemical composition. They are almost pure calcium carbonate with very little impurity. These impurities, being so small in quantity, only a few milligrams of precipitate or residue were obtained from 5 grams of samples, were very difficult to handle, and very closely agreeing results were difficult to get from duplicate analyses. But these impurities will not have any great influence on the cement manufacture. The conditions that will prevent limestone from being suitable for cement manufacture are (1) the presence of magnesium carbonate exceeding 4 per cent., or (2) the presence of silica in large quantities or in the form of chert or flint even in small quantities. These limestones are evidently satisfactory in these particulars; and they are quite suitable for cement manufacture if we can have a sample of clay rich in silica and iron oxide to mix with them.

*Clay.*—For use as Portland cement materials, clay should meet the following requirements in composition. (1) They should contain at least two and three-tenth as much silica as alumina. (2) Magnesia and the alkalies present should be low. (3) The sand present must be very fine. The clay analyzed meets all these requirements.

In order to produce a cement that is sound, normal in setting and of good strength it is imperative that the raw materials should be correctly proportioned. There are several formulas used by different manufacturers for proportioning the raw materials, but that of Newberry is the most common.

Lime = 2.8 × silica plus 1.1 × alumina.

Now as shown by analysis the percentage compositions of the raw materials analyzed are as follows:

|  | Clay. | Limestone† |
|---|---|---|
| Silica ... ... ... ... | 49.01% | 0.052% |
| Alumina . ... ... ... | 18.81% | 0.06 %‡ |
| Lime ... ... ... ... | 7.18% | 55.86 % |

That is, in 100 parts of clay there are present 49.01 parts of silica, 18.81 parts of alumina and 7.18 parts of lime; while in 100 parts of limestone there are present 0.052 parts of silica, 0.06 parts of alumina and 55.86 parts of lime. Now if we apply Newberry's formula, the silica and the alumina in the clay require 2.8 by 0.052 plus 1.1 by 0.06 or 0.21 parts of lime, which, subtracted from 55.86, leaves 55.65 parts available for combination. The silica and alumina in the clay require 2.8 by 49.01 plus 1.1 by 18.81 or 157.92 parts of lime, but as only 7.18 parts are present, 150.74 parts are not provided for. And this has to be obtained from the limestone. Now 100 parts of limestone can furnish 55.65 parts of lime, so the number of parts of limestone that will furnish 150.74 parts of lime may be found from this proportion: 100: 55.65 by 150.74. X is found to be 270.87. This is the maximum number of parts of limestone that may be added to 100 parts of clay according to Newberry's formula.

In our case, however, it seems better to use a smaller amount of limestone than this. Because if we use a mixture consisting of 100 parts of clay and 270.87 parts of limestone, then after ignition, during which all the volatile ingredients are driven off, the mixture would analyze as follows:

|  | $SiO_2$ | $Fe_2O_3$ | $Al_2O_3$ | CaO | MgO |
|---|---|---|---|---|---|
| From 100 parts of clay ... | 49.01 | 8.85 | 18.81 | 7.18 | 1.09 |
| From 270.87 parts of limestone ... ... | 0.14 |  | 0.16 | 151.93 | 0.366 |
| Sum ... ... ... | 49.15 | 8.85 | 18.97 | 159.11 | 1.456 |

Expressing these in percentages, we have

Silica...... 20.71% Iron oxide.... 3.73% Magnesia..... 0.61%
Lime...... 67.02% Alumina....... 7.99%

From this we can see that lime is present in excess, 65 per cent.

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*Silica is a part of the insoluble residue, and is therefore included in it.

Owing to lack of time and reagent the separation of potassium from sodium was not tried. Consequently the percentages of $Na_2O$ and $K_2O$ cannot be stated with precision. But if the alkalies were present all in the form of potassium compounds, the percentage of $K_2O$ will be 2.55 per cent.; and if they were all present as sodium compounds, the percentage of $Na_2O$ will be 1.92 per cent. And the percentage of the alkalies, *i.e.*, $K_2O$ plus $Na_2O$, must lie between these two values.

†The first sample is preferred, because it is much softer, and consequently much easier to grind.

‡This is strictly a mixture of iron oxide and alumina, but it will practically make no difference if we assume it to be all alumina, the quantity present being so small.

being the limit. In order to reduce the percentage of lime and at the same time not increase the percentage of iron oxide and alumina much beyond 12 per cent., a mixture of 100 parts of clay to 253 parts of limestone seems desirable. This mixture is equivalent to 43 parts of clay to 109 parts of limestone. In this mixture,

| | | | | | |
|---|---|---|---|---|---|
| 43 parts of clay will give ... | 21.07 | 3.09 | 3.81 | 8.09 | 0.47 |
| 109 parts of limestone will give | 0.06 | 60.88 | | 0.07 | 0.15 |
| 152 ... ... ... ... | 21.13 | 63.97 | 3.81 | 8.16 | 0.62 |

97.68

Thus we see 152 parts of raw materials will be reduced to 97.68 parts after ignition, if we assume that all the carbon dioxide and combined water are driven out. But if the product still retains about 25 per cent. of carbon dioxide and combined water, as shown in the percentage compositions of the Chinese and the American cements mentioned above, then the number of parts of each constituent left after the ignition of 152 parts of raw materials will also represent the percentage of that constituent present in the product. And these numbers shown in the last table represent evidently a Portland cement mixture of correct chemical composition. Of course it is by no means an ideal one. It would be a better mixture if the percentage of alumina were lower.

Thus we conclude that the samples of limestone and clay analyzed will give a moderately good Portland cement mixture so far as chemical composition is concerned. At the same time we must not suppose that chemical composition of the raw materials is the only thing to be considered in the establishment of a Portland cement industry. The physcial qualities of the raw materials are important, and many other things, such as the fuel supply and the condition of the market, all need further consideration.

# Customs Report on Yunnan

THE British firm of Brunner, Mond & Co. established an agency at Yünnanfu during the summer. A French firm, La Compagnie Générale d'Extrême Orient of Paris, opened an agency at Mengtsze during the autumn. Towards the end of the year the Straits Trading Company moved their premises from Mengtsze to Pishihchai, and hopes are expressed that the negotiations for the purchase of tin ore for export to the Straits will at last be successful.—At Kokiu the Hsi Wu Kung Ssu had a water supply laid on by Shewan, Tomes & Co., who had water brought from a distance of 12 *li* from Kokiu to Malake. New machinery and boilers were installed for this purpose at the mine. The company has engaged the services of two American experts, and improvements in the refining of tin are expected.—The construction of the Ko-Pi Railway, which is to connect Kokiu with Mengtsze and Pishihchai, progressed during the year. The part of the line running through the mountains, which is considered to be a work of engineering art, will be finished, it is said, at the end of March 1921, and through traffic will start in May. In November trains could reach Chatien, 30 *li* from Kokiu.—The Yünnanfu wireless installation, mentioned in the Trade Report for 1919, was put up in the autumn in the railway enclosure, this being the first of six which had been ordered from the French government. The other five installations will be for Tengyueh, Hokow, Mengtsze, Talifu and Kwangnan.—An electric-light plant was imported during the year for Linanfu, and a similar plant was expected early in 1921 for Amichow.—At Yünnanfu two hosiery factories were established in the summer, but the output was reported to be still small.—A company, styled the Jih Hsing Company, with a capital of $100,000, was also formed in the autumn, with the object of reviving the tea trade of the province and of causing improvements in the manufacturing methods. The Yunnan government, under T'ang Chi-yao, attempted during the latter part of the year to interest wealthy Chinese from the Straits Settlements in the province. Two Cantonese merchants arrived in November, having in view improvements and the developing of the provincial industries. They were authorized to open a bank, the Mining Bank (礦 業 銀 行), with a capital of $5,000,000 and to issue their own bank-notes for that amount. They also founded an industrial company, the Wan Shang Kung Ssu (萬 商 公 司), for industrial and mining purposes. One of these gentlemen, who is a mining expert, is said to have discovered tin ore at Shuitang (水 塘), near Iliang (宜 良), at Tachwang (大 莊), and at Tsaopa (草 壩), near Pishihchai. Rich ore is said to occur at the first-named locality, where mining operations have been started. With a government which will grant a respite from the war with the neighboring provinces, which will re-establish order and guarantee some security for life and property throughout the country, and will enforce strict legislation against the destruction of the forests, there is little doubt that Yunnan, with its mineral treasures and mountains so well adapted for the growing of timber, might easily become a prosperous and wealthy country and that it would supply the rest of China with timber and metal in sufficient quantities to make the republic independent as regards these commodities. At present the mountains of Yunnan continue to be ruthlessly ruined by indiscriminate and mischievous burning of grasslands suitable for grazing and by the reckless destruction and burning of forests, of new woods trying to recover from previous devastation, and of precipitous hillsides which are absolutely unsuitable for anything but the growing of forest trees. To anyone traveling between Haiphong and Yünnanfu by rail the contrast between Tonkin, with its magnificent, well-kept forests and rich hill plantations, and poor devastated and ruined Yunnan is striking. Unless severe laws against the destruction of the forests are promptly enforced, in a very few years, the last of her forests having disappeared and taken away with them the remaining chances of an impoverished land to recover itself, South Yunnan will resemble the arid deserts of North China, swept by droughts, floods, and famine and an eyesore and a drain on the resources of the rest of the country.

# The Oilfields of China

At the present time oil is contesting with coal for precedence in international importance. In these circumstances it is matter for little surprise that increased attention is again being turned to China's great resources in oil, and several projects are under consideration for the more rapid development of such resources. This enterprise is to be found in America, Japan and Great Britain. The first-mentioned country has already spent large sums in expert investigation, and there is a considerable amount of American oil machinery in China. Present plans are based on the favorable reports available just prior to the outbreak of the war. Those reports, it may be recalled, concerned the petroleum rocks and results of borings on the south of the desert Gobi, at the base of the Nanchang Mountains in the province of Kangsu, at a distance of 20 miles from Schangte-King-pou and near the River Tscke-King-sia.

The petroleum wells of North Shansi, which for many years supplied wide areas of the country with illuminating oil, are the best known but possibly not the richest Chinese oil resources. The petroliferous formations that distinguish the Trans-Caucasian oil-fields, extending from the Crimea into Persia, Burmah, Chinese Turkestan, Kangsu and Shensi, are known to cover a vast range, and it is contended that some of the richest gushers will in the future be developed in the Chinese section.

In the past the progress of oil production has been unsatisfactory and spasmodic. A very great stimulus is now being applied to development. The world-wide contest over oil has already touched China, and in view of the plans now being advanced, the exploitation of the country's rich deposits rank amongst its most important projects.

# Mining Development in Korea

## Efforts to Revive It. Some Interesting Information

THE mining situation in Korea at the present time is giving rise to some discussion as to the future by those who are interested, and these do not appear to be a few. It will be remembered that during the war in Europe the mining industry in Chosen enjoyed an unprecedented season of prosperity, the cause being the great demand for Tungsten, iron and other minerals so valuable in the manufacture of war material. As a consequence many mines all over the country were exploited. With the signing of peace this unusual demand ceased, gradually, of course, until now many hundreds of mine-owners have closed their workings. Inactivity at the present time is even more marked than it was before the war. It is generally recognized that it will be impossible to recover such prosperity as was enjoyed during the war, but those interested are questioning the improbability of being able to raise the mining business to a normal level if not to a flourishing one. The matter has long been the subject of careful study by a commission of more than sixty gentlemen of the Chosen Mining Association. These gentlemen have now concluded their inquiries and have published the result of their work. According to their conclusions there are five special causes working against the revival of the industry which must be eradicated if its development is desired. Briefly they are as follows:

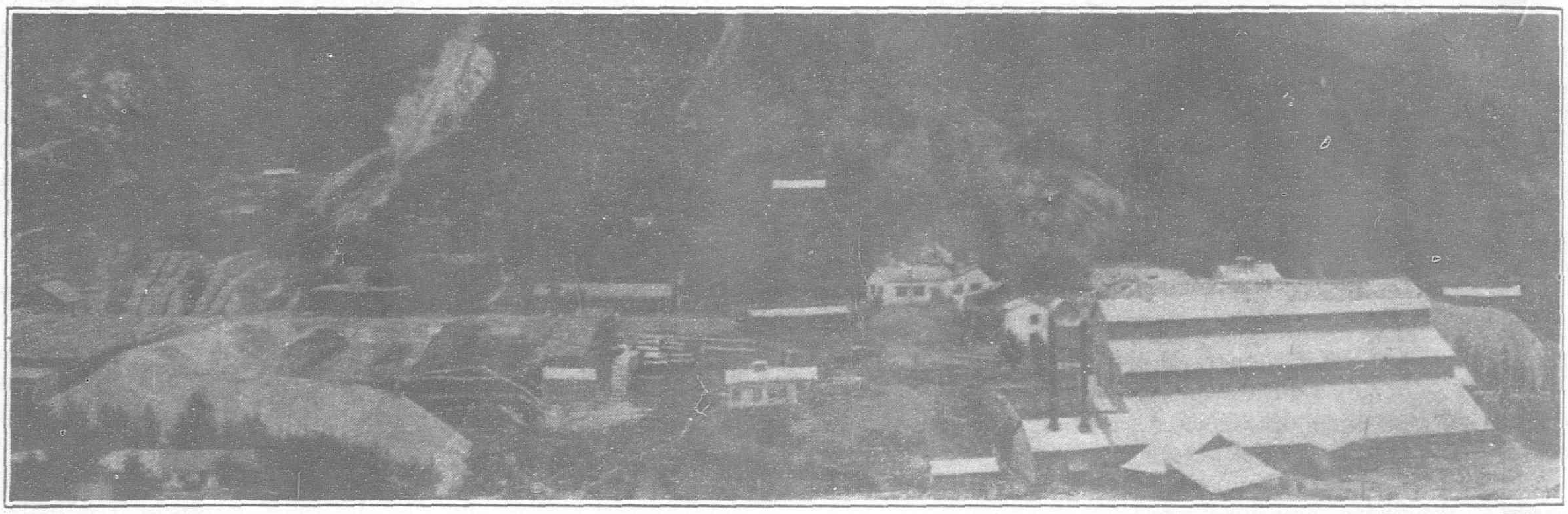
1. Comparative indifference of the government to the development of the industry.
2. Comparatively heavy obligations mine-owners have to shoulder.
3. The same with prospectors.
4. Lack of sufficient capital and expert knowledge.
5. The high price of motive power, which is chiefly obtained by the burning of coal.

Efforts will be made by the Chosen Mining Association to remedy all these defects. It is hoped that success will follow their activities and that the government will assist them as much as possible. A reform that will do much to bring about the desired result is in reducing the taxes and fees to which mine-owners are at present obligated. Where any industry is in its infancy, protection and encouragement are necessary if it is to survive.

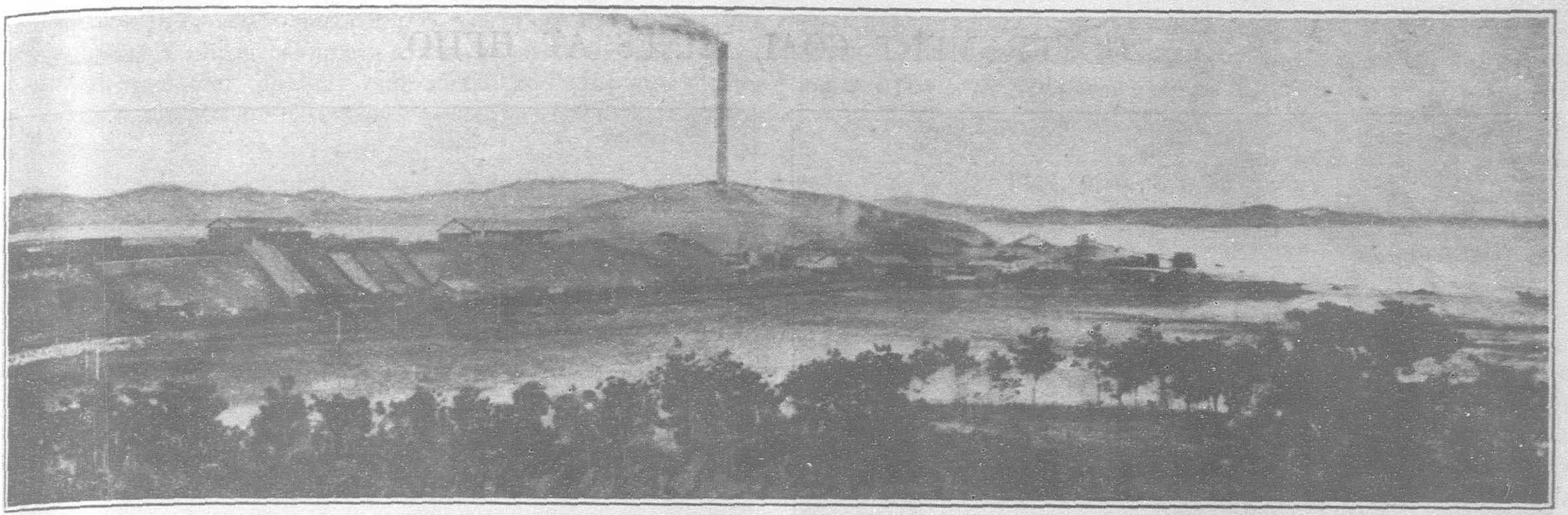
A very interesting article on mining in Korea written by T. Hoshino, manager of the research department, Bank of Chosen, is so informative that it is reproduced.

### PART I

*Foreign Activity in Korean Mining Field.*—Nature has stored in the Peninsula of Chosen a good many kinds of precious and useful minerals in goodly quantity, but they long remained untouched for the most part, and when work on them was started it was mostly by foreign hands. Before that time there was no mining to speak of. Foreign activity in the peninsular mining field dates back to the year 1896 when a concession was granted to Mr. James R. Morse, an American, in Unsan district, North Pyungan province, for mining purposes. The grant thus secured induced people of his own and other nationalities to make similar applications, and the result was that two concessions were made to Russians in North Hamkyung province, one to Germans in Kangwon province and one to Englishmen in South Pyung-an province, all of which, however, were later abandoned by the concessionaires, and the mines actually in the hands of foreign concessionaires at the beginning of the new régimé were, besides the above-mentioned Unsan mine, Suan mine in Whanghai province conceded to Englishmen, Chiksan mine in South Choongchung province to Japanese, and Changsung mine in North Pyung-an province to Frenchmen, of which that at Unsan alone was being operated, the others not being ready to start actual mining work. Unsan mine was operated by an American syndicate, called the Oriental Consolidated Mining Company, incorporated under the laws of West Virginia, U.S.A., with a capital of $5,000,000, and paid annually Y.25,000 to the Korean government as royalty. Its prosperity may be gathered from the fact that, up to June 31, 1908, the total output from the mine amounted to $10,701,157, and, that for the single business year ending February 1, 1909, reached $1,716,104 in value. The above-mentioned mines were all gold, and, in fact, foreign activity in the Korean mining field was practically confined to gold then as it is now. But other minerals were not entirely untouched. The rich coal beds in the neighborhood of Pyengyang were leased to a French firm, Messrs. Rondon, Plaisant at Cie., by the imperial household, and another company (a Korean and American partnership) was working coal at different places, all paying the imperial household 25 per cent. of the profits as royalty. The imperial household is even said to have furnished Y.300,000 to each company as part of its capital. Nor were the Japanese excluded from the field. The iron mines of Chai-ryung and Eun-yul, near Chinnampo, were worked by three Japanese as agents for the imperial



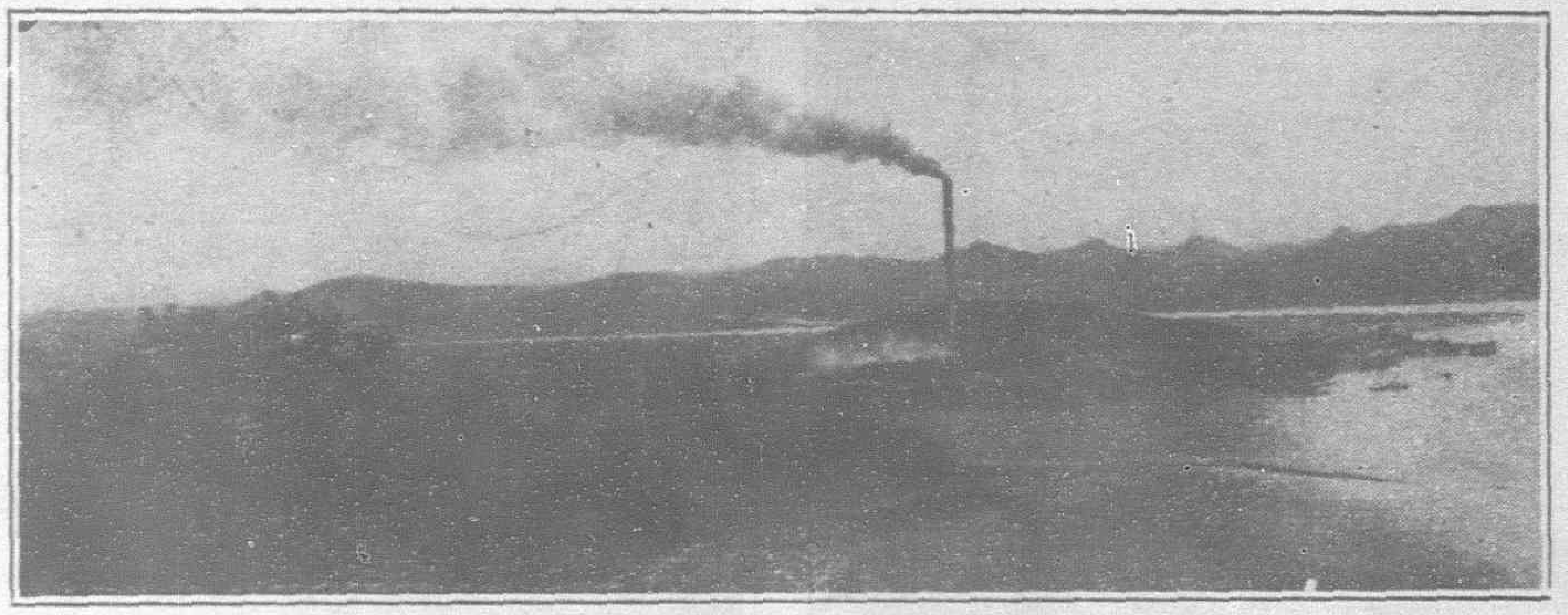
Unsan Gold Mine of the Oriental Consolidated Mining Company



The Kuhara Mining Company's Gold Smelter at Chinnampo, Korea

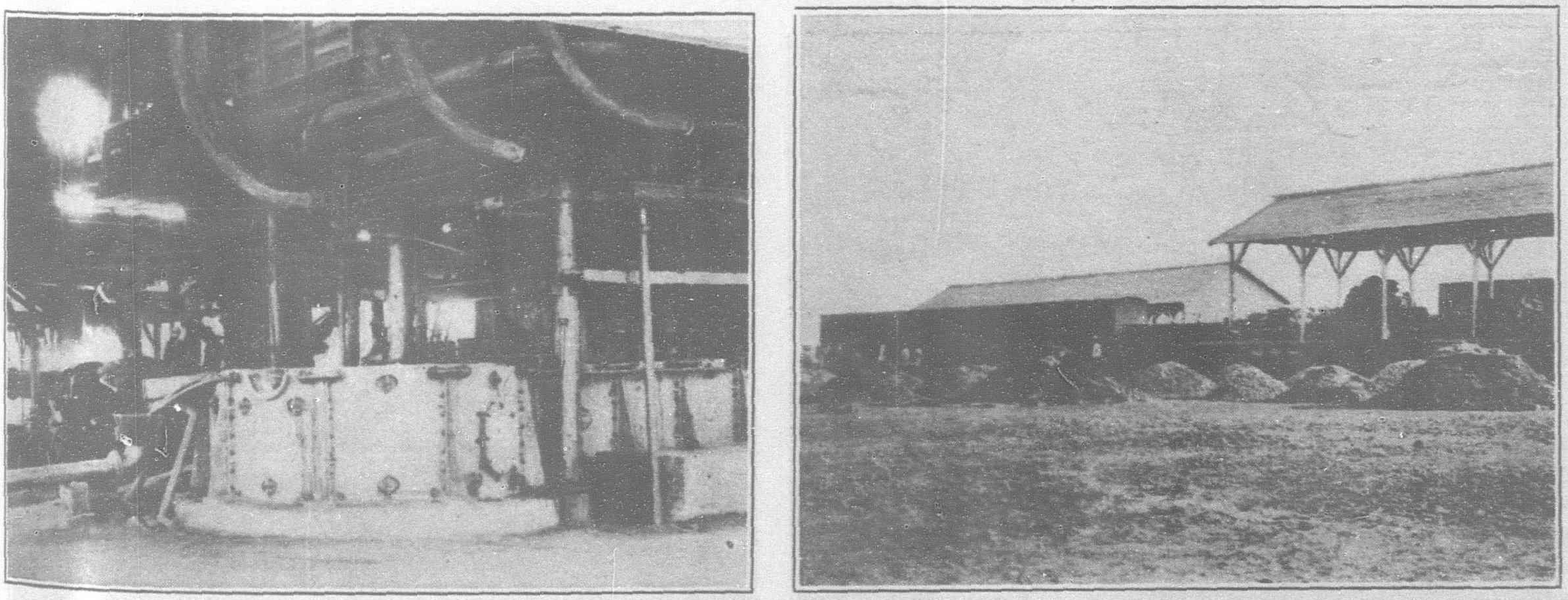
household. Such competition for mining privileges by foreigners lasted for many years, and, though not unaccompanied by some evils, proved after all a stimulus to the industry.

But the mining administration in Korea was extremely ill-managed, deeply corrupted by bribery, favoritism, and the oft-mentioned overlapping of the functions of the imperial court and the government. While mines were under the control of the minister of agriculture, commerce and industry, concessions were often granted secretly to Koreans or foreigners by the emperor without consulting the cabinet. In some cases a concession granted at one time was revoked at another without good reason or compensation, and wantonly bestowed upon another. Not infrequently the same concession was granted to different parties, causing dispute and litigation. Then the mining-tax was collected not only by different departments of the state but also by the imperial household itself, and often twice over, while the local authorities also imposed an arbitary tariff. Under such circumstances no healthy progress of the mining industry could be hoped for.



Another View of the Kuhara Smelter at Chinnampo

*New Mining Laws.*—On the establishment of the Japanese protectorate in 1905, steps were taken to correct the unsystematic manner in which the mining administration was conducted, and laws concerning mining proper and placer mining were enacted and put into force on September 15, 1906. By these laws it was provided that, (1) all state mines were to be brought under the control of the minister of agriculture, commerce and industry, to whom application for concession was to be made in accordance with the provisions of the laws, (2) all mines, the ownership of which could not be definitely established, were made state property, (3) mining districts were to be of fixed extent, and mining was prohibited in certain localities, (4) in case of necessity private lands were made liable to expropriation, (5) full protection was extended to mining concessions, and cancellation of such concessions could be made only in accordance with the provisions of the laws, (6) concession rights were made the object of transfer by sale, gift or succession, or of mortgage, (7) taxes were to be levied on mining products and districts, and fees charged for concession, (8) in case of several applications for the same concession

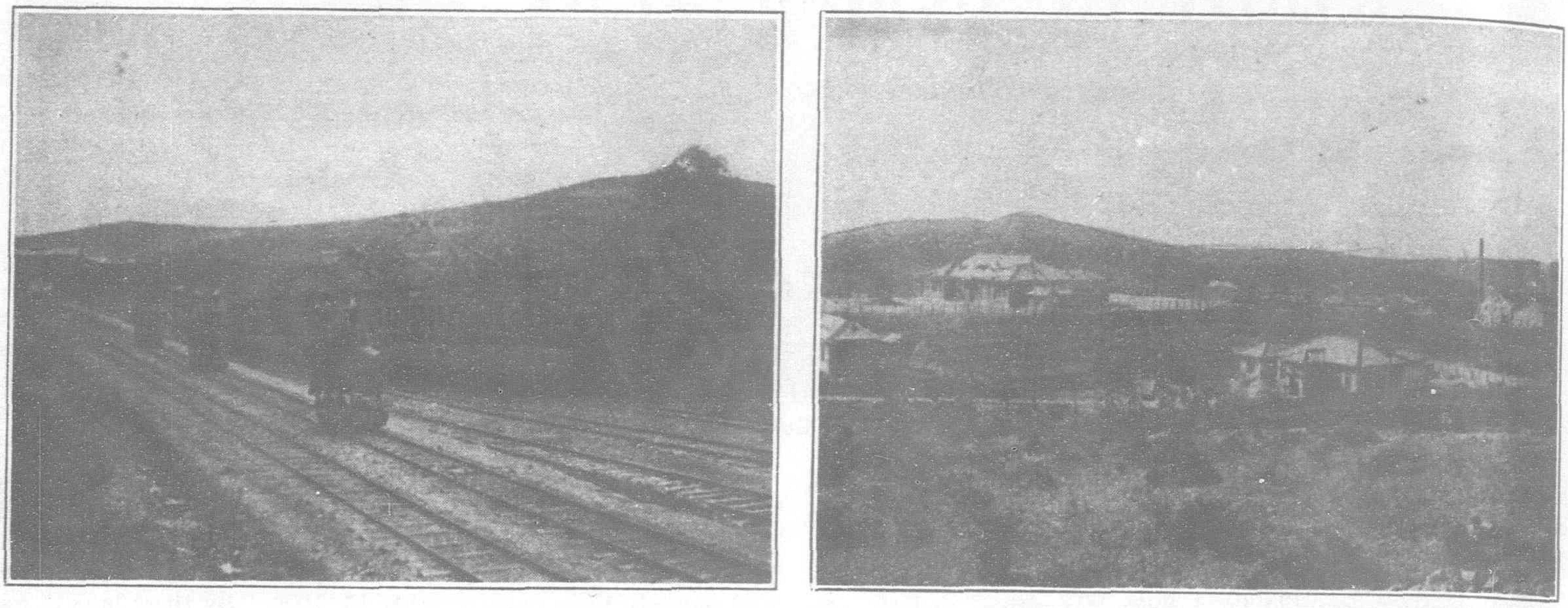


KUHARA SMELTER AT CHINNAMPO

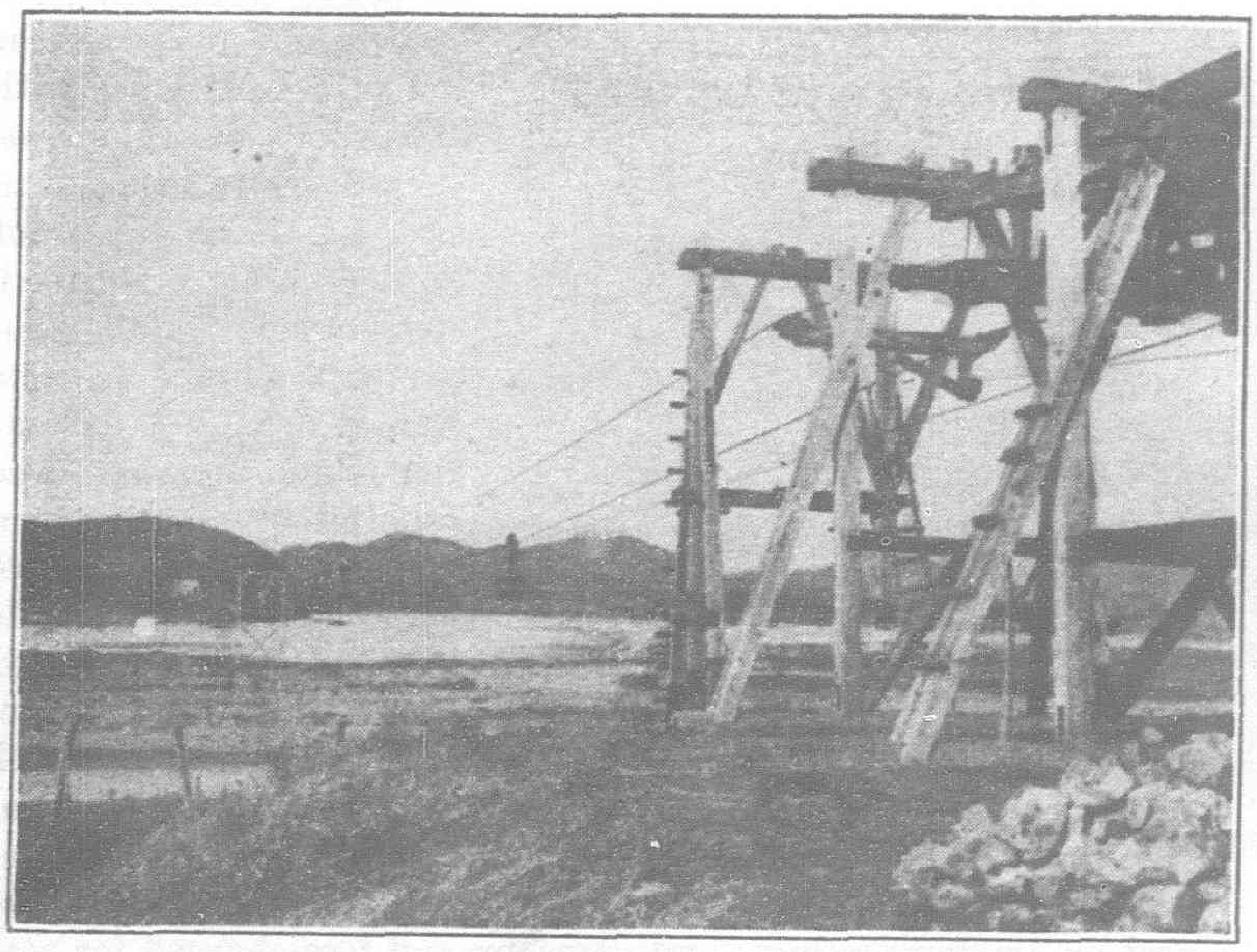
Smelting Furnace with Water Jacket

Railway Unloading Ore Direct to Smelter

# GOVERNMENT COAL MINES AT HEIJO

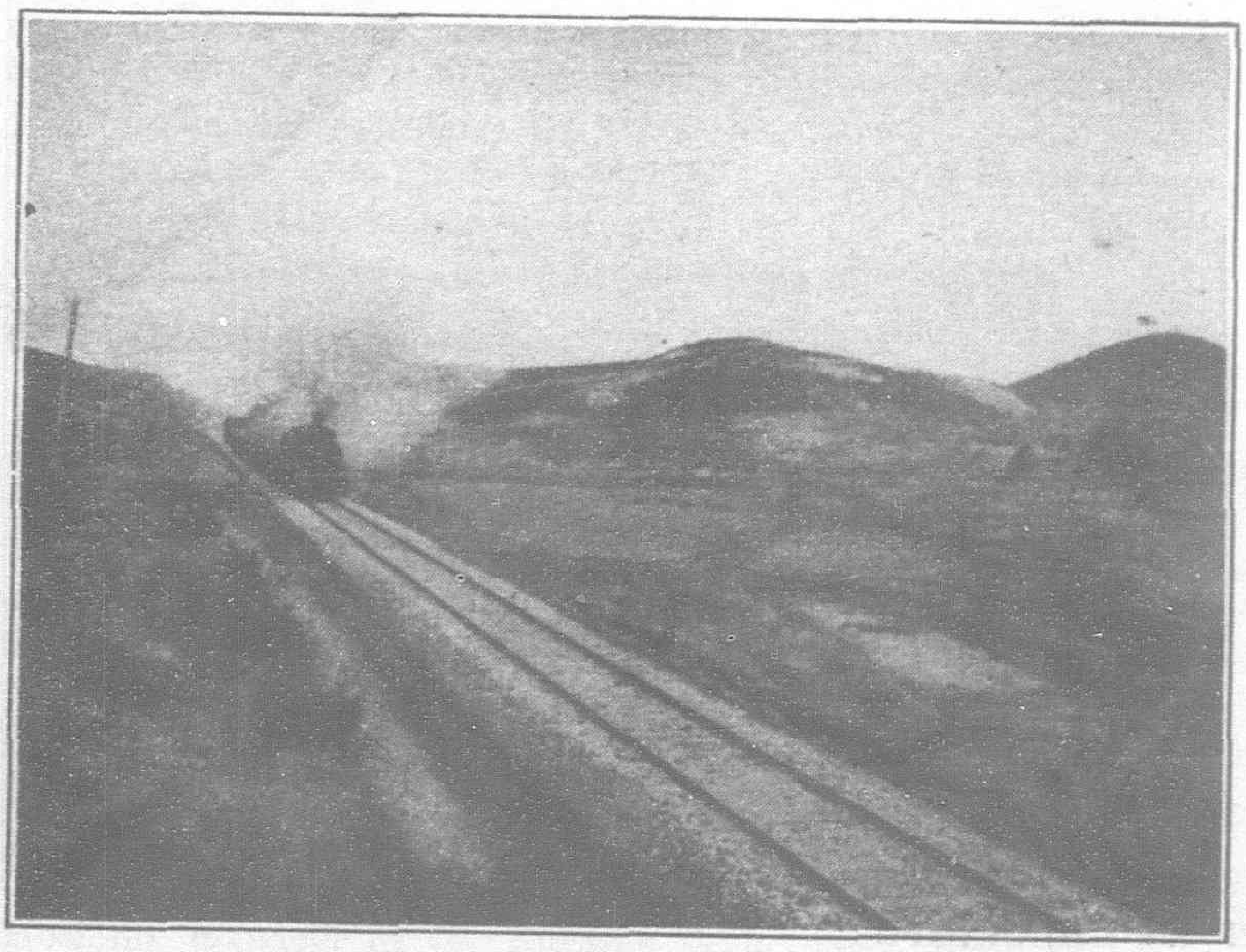


Government Coal Mining Station at Jido, near Heijo

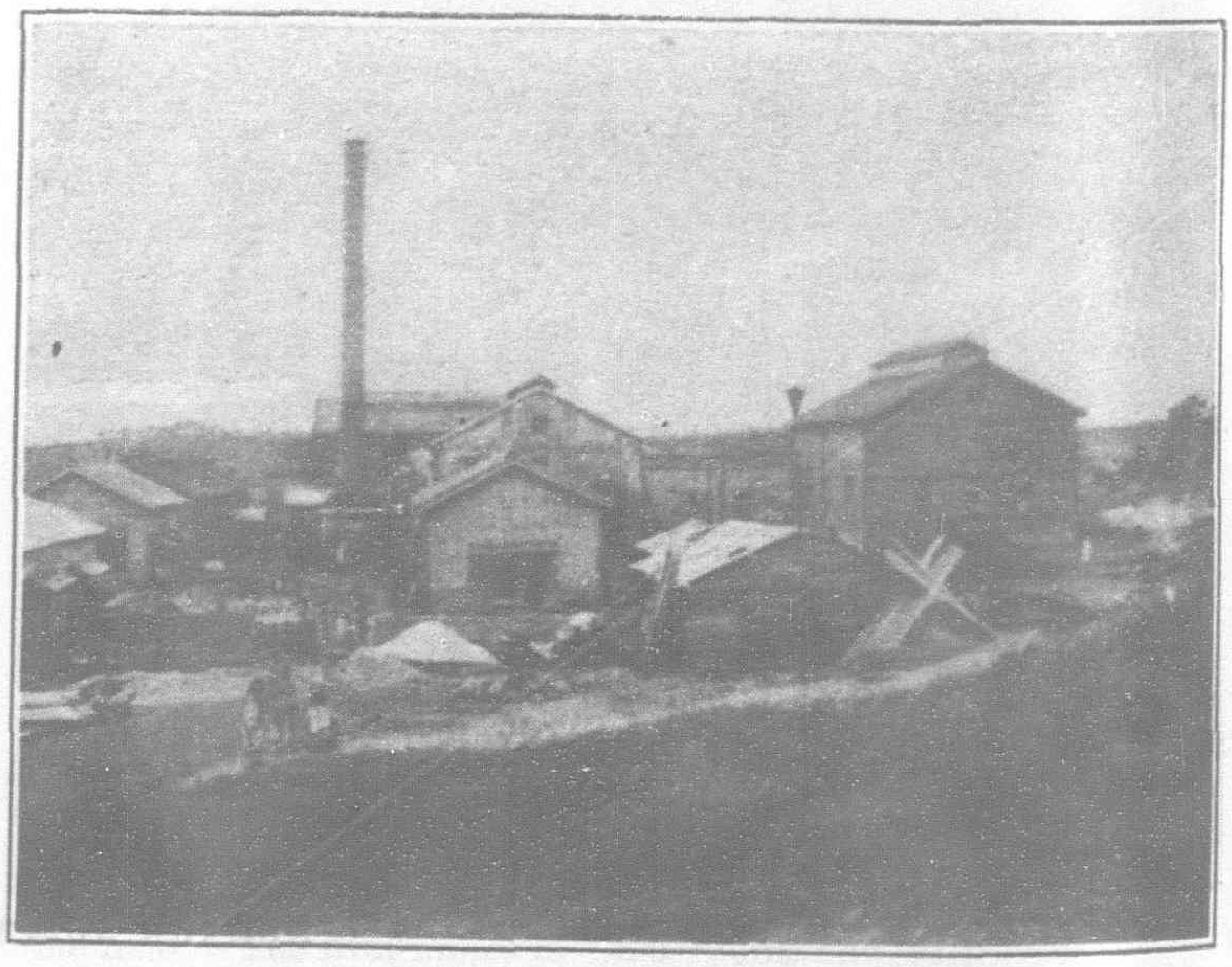


Aerial Tramway

Interior of Mine



Railway Line to Heijo Coal Mine



Heijo Mine Bricquette Factory

the grant was to be made according to the priority of application, (9) boundaries of mines belonging to the imperial household were to be redefined and publicly announced, and (10) any matter relating to foreigners in executing these laws and regulations was to be referred to the resident-general for his consent.

Enacted to meet urgent needs the laws left much to be desired, and an amendment was made as early as August, 1907. This was, however, only the beginning of a series of amendments subsequently made. In fact, the history of the mining regulation covers the whole period between then and December, 1915, when the last mining law was promulgated.

Heijo Coal Mine, Loading Station

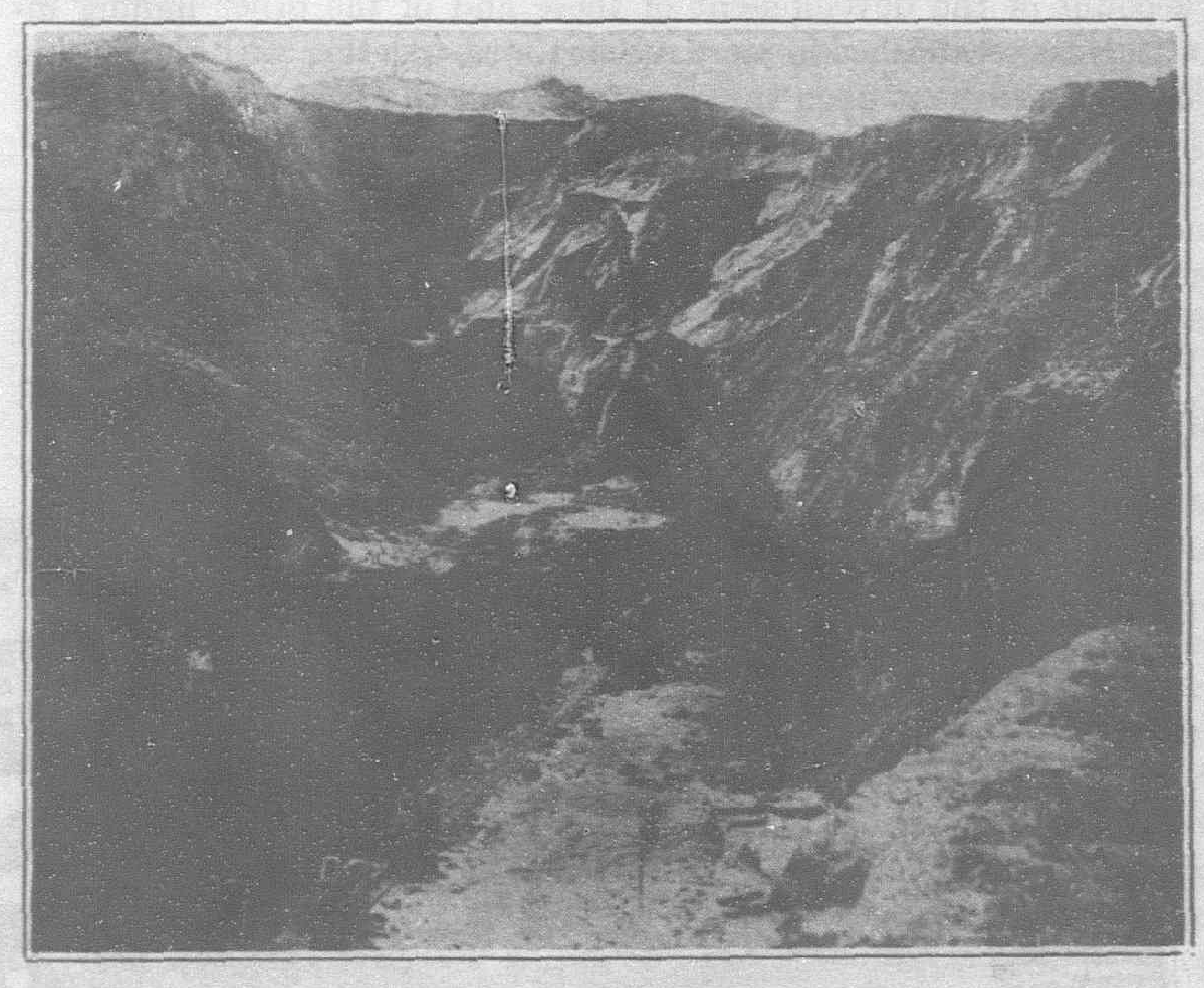
Prince Ito, the first resident-general, seems to have been well-disposed towards foreign investment in mines in the country. To some Koreans who regarded, not without reason, foreign mining enterprises as the spoliation of the wealth of the country, he explained that these undertakings were doing good to Korea as they gave work to many Koreans, and the gold taken by them was sold in Japan and minted there ultimately to return to Korea in the form of coin. More substantial aid was given by exempting from duty all machinery, implements, and other necessities for mining purposes, and by remitting the export duty on copper and concentrates of gold, silver and copper (gold and silver bullion or coin being already free of duty). The forestry law was also revised with a view to affording facilities to the industry. In consequence, at the end of the protectorate régime, the list of concessions made to foreigners showed American concession-holders to be 4 corporations and 4 individuals; English, 2 corporations and 1 individual; French, 2 individuals; Russian, 1 individual; Italian, 1 individual; and, in addition, there were several held by Japanese and Americans jointly, or by Koreans and Americans. The aggregate area of the mining districts thus conceded reached 269,566 acres, these being chiefly gold mines, followed by gold and silver mines, graphite, copper and coal in order.

But the annexation changed the situation in this matter as well as in many others, and, with a view to securing uniformity of laws throughout the empire, a mining law was enacted in December, 1915, and put into force on the 1st of April, 1916, to replace the old law enacted in 1906. The main points of change were (1) the prohibition of foreigners from acquiring new mining permits in Chosen, except in the case of a corporation organized by foreigners as a Japanese legal being, (2) the addition of 12 important minerals, such as tungsten, molybdenum, chromium, etc., to the list of mining products subjected to the mining law, (3) the recognition of right *in rem* in the mining right to which the regulations concerning immovable properties are applied, and (4) the application of the law of expropriation of land to expropriation and use of those lands necessary for mining operations. But the mining concessions granted to foreigners by the former Korean government, and the mining rights acquired by foreigners according to the old mining regulations were strictly respected, though those applications for mining permits filed with the authorities by foreigners according to the old regulations and not granted at the time of the enforcement of the new regulations were all rejected.

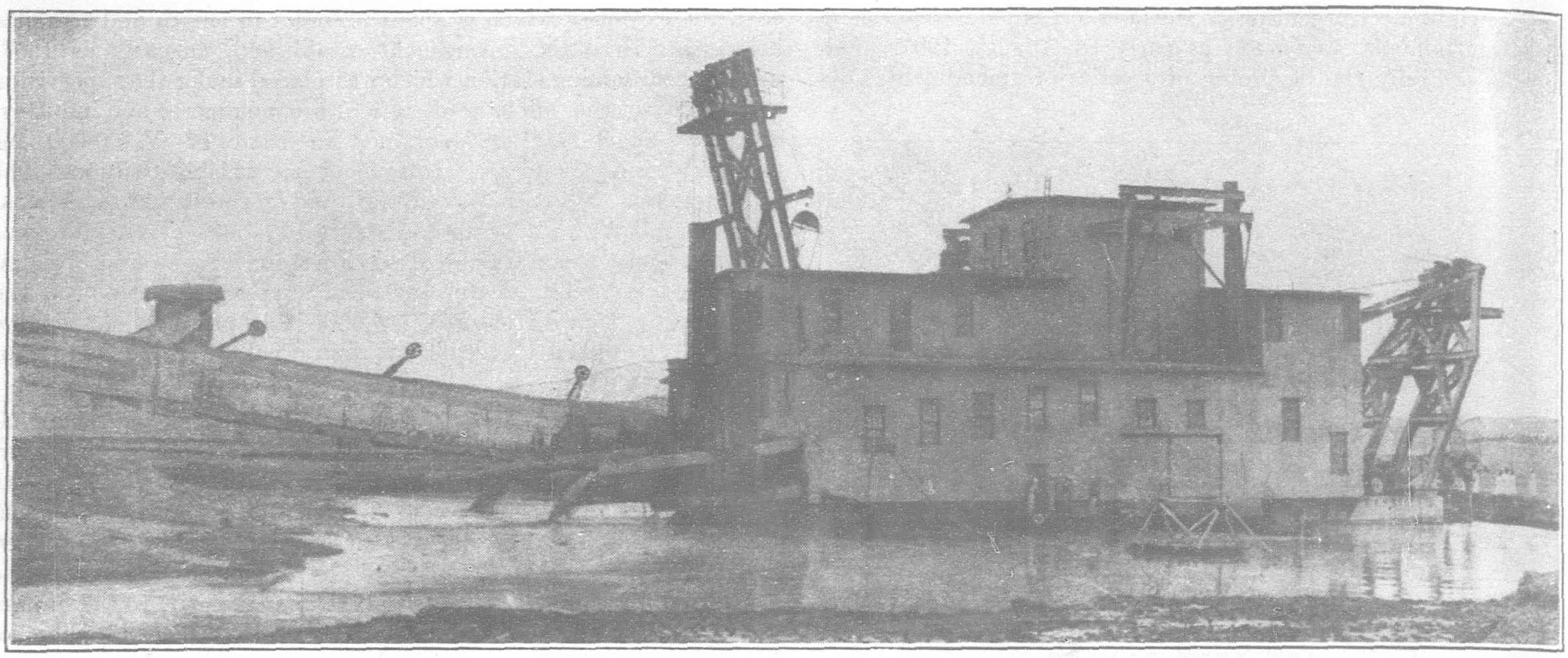
*Government Mining Undertakings.*—Along the Taidong River in the neighborhood of Pyengyang are rich veins of anthracite coal, the extent of which is about 32 miles in length and 7½ miles in width. Here the government established, as early as 1907, its own coal-mining station which was placed under the supervision and control of the minister of agriculture, commerce and industry, and the budget for 1908 contained an item of Y.300,000, for current expenses and new equipment for this institution. The following year, in order to facilitate the transportation of the coal from the mine, a railway for a distance of about seven miles was built, and for this and other expenses Y.150,000 was appropriated by the government. Again, in 1911 a further extension of the work was made at a cost of Y.760,000. The products of the mine are mostly supplied to the Tokuyama Coal Briquet Factory of the Japanese navy.

The iron mines of Chai-ryung and Eun-yul in Whanghai province were also placed under government control in December, 1907. But, in this case, the government did not work the mines but appointed agents to conduct the mining operations. From the very beginning the products of these mines were wholly supplied to the Edamitsu Iron Foundry of the Japanese government, so it was found expedient to transfer their management to the Japanese foundry altogether. They are now the chief suppliers of iron ores to the above-mentioned government foundry.

*Japanese Entry into the Field.*—Japanese activity in the Korean mining field, apart from the government undertaking above mentioned, may be said to date from about 1911 when some Japanese mining magnates, who had hitherto held back from any activity in the peninsula on account of its unsettled state, at last entered the arena. The famous Mitsubishi firm purchased in July, 1911, iron districts covering 1,637 acres in Kyumipo, Whanghai province, and drew up a scheme to establish a large pig-iron foundry there. Another great firm, the Mitsui, obtained in April, 1912, an iron mining permit extending over 1,601 acres in Kaichun district, South Pyung-an province, and commenced work the following year. The well-known copper magnate, Mr. Furukawa, obtained in April, 1912, a concession to mine gold over an area covering 10,014 acres in Koosung district, North Pyung-an province, and began experimental working the same year. About the same time the Meiji Mining Company obtained an important coal-bearing



Iron Mine in the Inritsu District of Kokai Province, Supplying Ore to the Japanese Government Steel Works at Wakamatsu concession extending over 776 acres in Anju district, South Pyungan province, while the Fujita firm of Osaka, obtained that of a zinc mine covering 36 acres in Yung-byun district, North Pyungan province, and started operating it immediately.

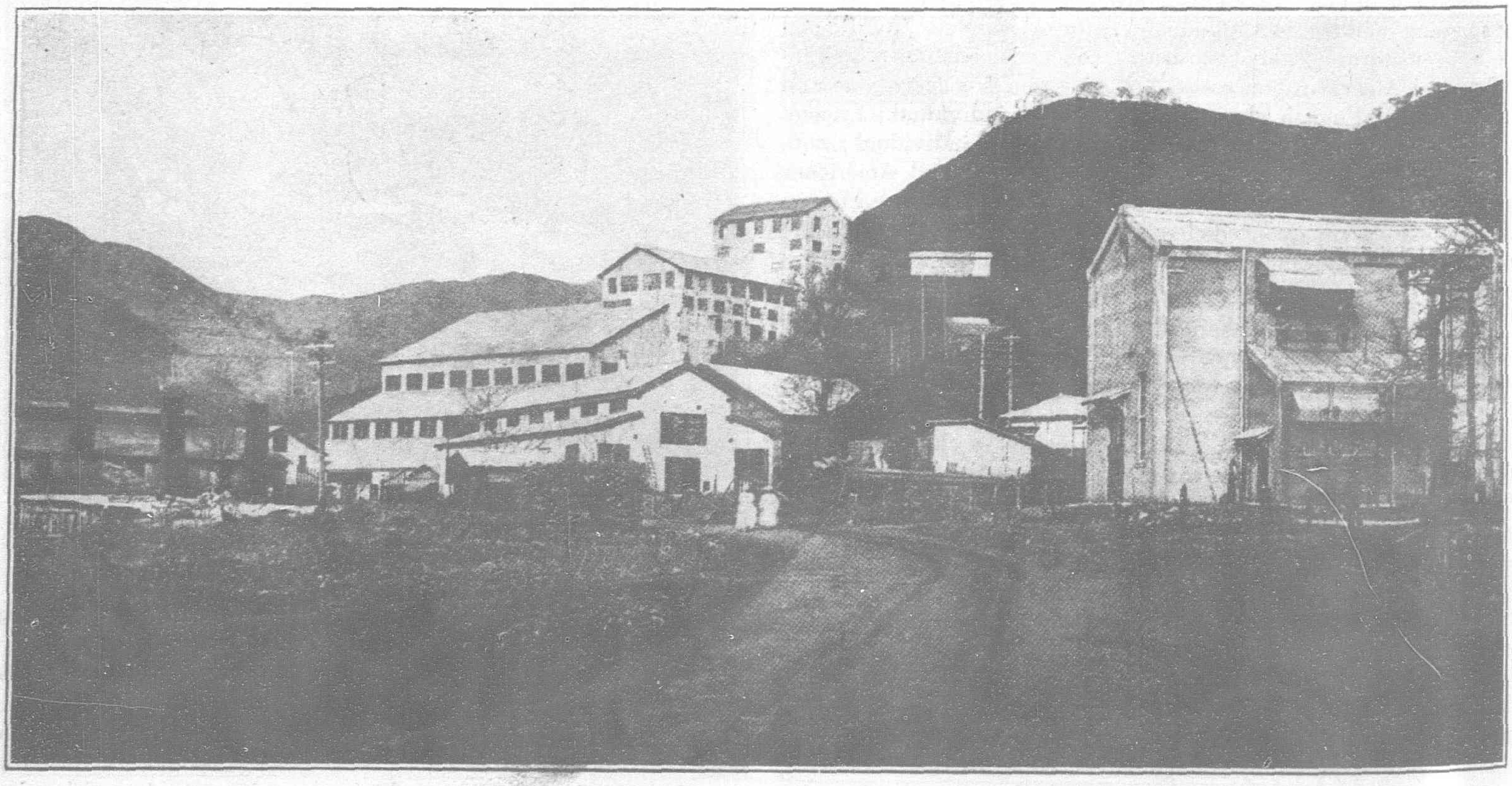


American Gold Dredge built by the New York Engineering Company at Chicksan, Korea

Thus it will be seen that the gold fields, so far known, being already occupied by men of other nationalities, Japanese activity was mostly exerted in other directions, principally coal and iron. These Japanese enterprises may well be said to have revolutionized the industry in question, for they are being conducted on an exceedingly large scale. The Mitsui Mining Company above referred to built a light railway from their mines to Shin-anju Station, a distance of about 20 miles, for the transportation of iron ores. An account of the development of these and of the other mining institutions established in more recent times, together with the mining boom consequent upon the great war, will be given later on.

## PART II

*Mining Development in General.*—The development in mining has already been described in Part I incidental to the description of the mining laws and of the various measures adopted for its development. As has already been observed, prior to the annexation mining in the peninsula was for the most part conducted by Westerners, and gold was the only metal mined on a large scale. After the annexation, Japanese began to play an important part in Chosen's mining field, and, while the best and largest gold mines are owned by foreigners, most other minerals are now being mined by them. The Mitsui, Mitsubishi, Furukawa and Fujita companies made their way into the peninsula, and mining enterprises on a large scale began to be set on foot in all parts of it. Indeed, the few years following the annexation formed a turning-point in the mining history of the peninsula. Japanese miners followed



The Tui Mi Chung Mill and Power Station of the Suan Gold Mine, Korea by Japanese capital came and explored the country and vied with each other in obtaining mining permits, some with the desire of working them, others without any such purpose but with the idea of speculating in the mining rights thus obtained. The government took the policy of granting permits only to those who really desired to work them, a measure which inevitably called forth much adverse comment but nevertheless proved highly beneficial to the healthy development of the industry.

*Increase in Number of Mines.*—The number of permits thus granted annually is shown in the following table :—

| | Permits to | | | |
|---|---|---|---|---|
| Year | Japanese | Koreans | Foreigners | Total |
| 1910 ... ... | 124 | 161 | 9 | 294 |
| 1911 ... ... | 190 | 207 | 5 | 402 |
| 1912 ... ... | 196 | 121 | 9 | 326 |
| 1913 ... ... | 207 | 135 | 10 | 352 |
| 1914 ... ... | 214 | 93 | 1 | 308 |
| 1915 ... ... | 205 | 157 | 18 | 380 |
| 1916 ... ... | 422 | 308 | 74 | 804 |
| 1917 ... ... | 763 | 461 | — | 1,224 |
| 1918 ... ... | 621 | 367 | — | 988 |

It is hardly necessary to point out that the sudden increase in the mining permits granted in and after 1916 was due to the mining boom consequent upon the European war. At the end of 1918 the total number of mining permits in force and mines in operation, with their respective acreage, were as follows :

| | No. of Concession | Area |
|---|---|---|
| Mining permits given ... | 3,204 | 1,070,437 acres<br>361.2 miles* |
| Mines in operation ... | 534 | 342,955 acres<br>58.1 miles* |

Remarks: This table does no include four government mines and Unsan mine. *This represents the length of river beds for placer mining

Thus it will be seen that, of the 3,204 mines covering an area of 1,070,437 acres for which permits were given, only 534 mines covering 342,955 acres, or less than 17 per cent. of the number of mines, and 32 per cent. of the aggregate area, are being worked.

*Gold.*—Chosen alone produces nearly the half the total production of gold in the Japanese empire. The highest output on record was Y. 15,471,545 in 1916, the last year unaffected by the deteriorating effect of the war on its production. Until that year the production was constantly on the increase, and was one of the largest items of export, being second only to rice.

It has already been observed how the two largest gold mines in the peninsula, the Unsan and Suan mines, passed into alien hands. They are still the largest, and both are now worked by Americans. The latest report gives the output of the former at Y. 3,250,000 and that of the latter at Y. 3,730,000. The Changsung mine, worked by a French company, and the Chiksan mine, owned jointly by Japanese and Americans, came next with an annual output of Y. 850,000 and Y. 1,000,000 respectively. Thse large mines are provided with stamp-mills of the most advanced type, and some have a cyanide plant, while the Unsan mine alone employs 2,000 hands. Smaller mines, both vein and placer, are mostly worked by Japanese and Koreans. Of late the famous Kuhara firm has established a large smelter in Chinnampo where gold ores purchased by the firm are smelted. By the establishment of this smelter, not only have the small miners, lacking proper appliances, been greatly facilitated in their mining operation, but sulphide gold ores, in the reduction of which both the amalgamation and the cyanide process failed, can now be dealt with successfully.

Many gold mines have since been discovered, of which one in Koosung worked by the well-known Furukawa firm and the other in Naksan worked by a Mr. Kobayashi are notable ones. The government is now prospecting three mines at Sangju, Wiju and Shin-heung, all of which have proved hopeful. The war has thrown a great obstacle in the way of gold mining the world over, in the form of dearth in mining materials and labor, while the value of its production has remained the same, and Chosen has been no exception to this. But now that the war is over and the effects it has produced are disappearing one after another, not only is the recovery of its old prosperity merely a matter of the near future, but its progress after that is expected to be something extraordinary.

As a bank of issue, the preservation of gold is of vital importance to the Bank of Chosen. For that purpose the bank is provided with a bullion department, and in ordinary years over 85 per cent. of the total gold output in the peninsula is collected by it.

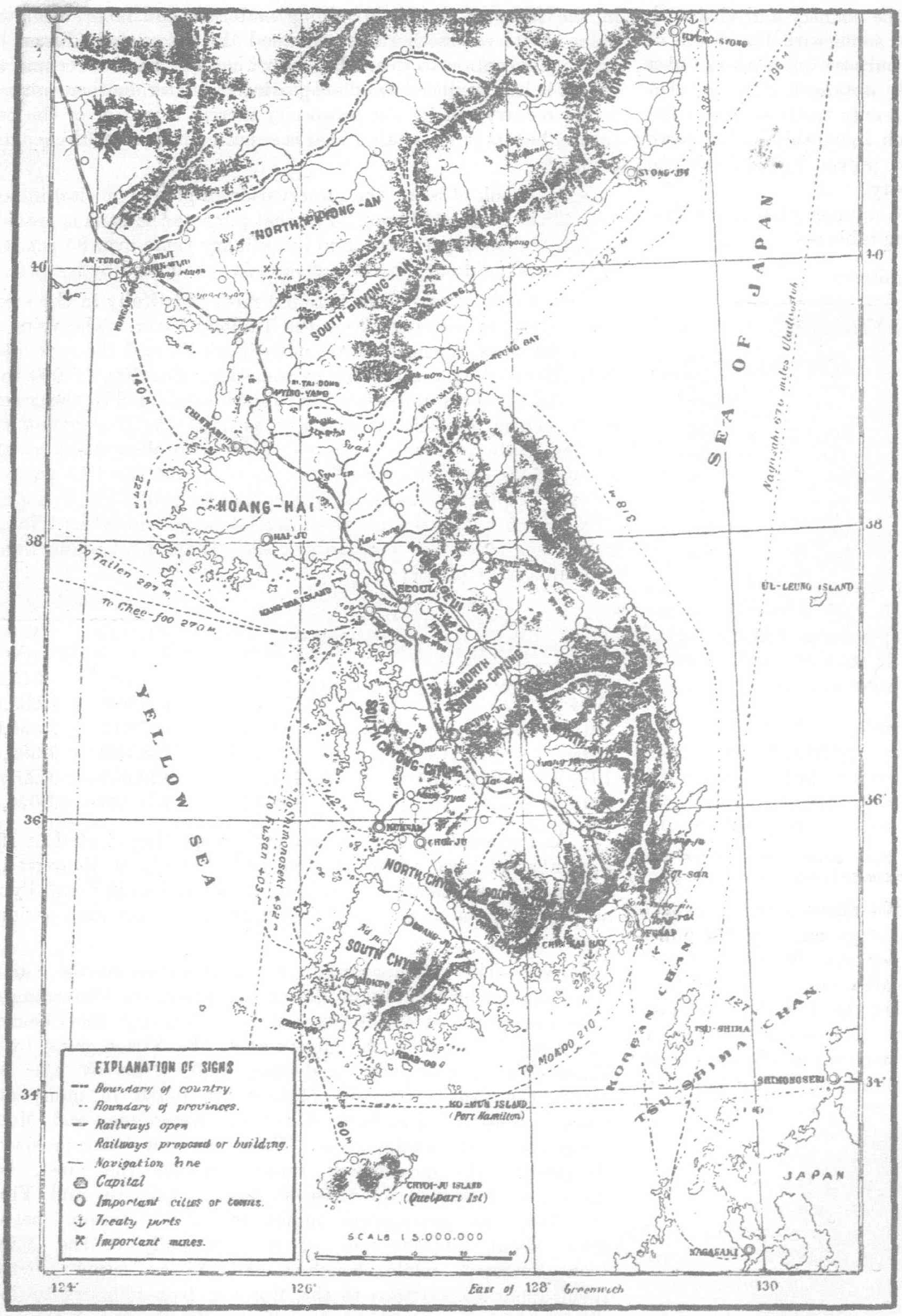
*Anthracite Coal.*—This is found most plentifully in the neighborhood of Pyengyang, along the Taidong River. The veins are about 32 miles in length and 7½ miles in width, and the amount of coal they contain is estimated at something like 200,000,000 tons. The working of this important coal mine is conducted by the government, which established as early as 1907 the Pyengyang coal mining station. Analysis shows that the coal contains volatile matter 7.20 per cent., coke 70-90 per cent. and ash 4-15 per cent. Of the output of the mine 90 per cent. is sent to the Tokuyama Coal Briquet Factory of the imperial navy and is used by the navy as a substitute for Cardiff coal. The annual production of the mine is as follows :

| | | Sold | |
|---|---|---|---|
| Year | Quantity of Output Tons | Quantity Tons | Value Yen |
| 1913 ... ... ... | 118,393 | 94,598 | 815,830 |
| 1914 ... ... ... | 151,410 | 133,989 | 1,235,647 |
| 1915 ... ... ... | 188,078 | 167,012 | 1,538,681 |
| 1916 ... ... ... | 176,205 | 138,083 | 1,304,678 |
| 1917 ... ... ... | 154,145 | 120,061 | 1,297,256 |
| 1918 ... ... ... | 140,773 | 139,725 | 2,074,471 |

As the result of the government prospecting started in 1911, a number of large anthracite coal beds have been discovered, of which those at Kaichun, Tukchun and Soonchun in South Pyung-an province, and at Samchuk in Kangwon province are considered most hopeful.

*Iron.*—The principal iron mines in operation are the Kaichun mine worked by the Mitsui Mining Company, the Chairyung and Whangju mines by the Mitsubishi Iron Foundry, the Chairyung and Un-yul mines by the government, the Yiwon mine by the Rigen Mining Company, and the Anak mine by the Asoh Mining Company. Deposits of iron are found in many other places, Sohsan, Tanchun, Samchuk, Kangnung and Moosan being the most notable ones. These are now being prospected. At present the government mines produce the most, being the oldest, followed by those at Anak, Kaichun and Yiwon, of which the government mines and Anak supply between them about 200,000 tons of iron annually to the Yawata Iron Foundry, while Kaichun and Yiwon supply between them about 40,000 tons to the Muroran Iron Foundry in Japan and 30,000 tons to an iron foundry in Manchuria. A large iron foundry is now being established at Kyumipo by the Mitsubishi firm, and a considerable increase in iron production is expected when this foundry, as well as the mines now in preparation, is in full working order. The great impetus given to the iron industry in Japan by the war and the bitter experience the country had in the shortage in the supply of the metal called the attention of many to the iron deposits in the peninsula, and it is expected that their development will go far toward the solution of this much-discussed iron problem.

*Graphite.*—The graphite found in Chosen is classified according to the form of its ores into scaly, fibrous, foliated and earthy. The first two varieties, which are considered the best, contain over 90 per cent. of carbon. These are mostly found in North Chosen, the principal mines being those at Koosung, Chosan, Changsung and Sakchu, while the other species, which are somewhat inferior in quality, are found in the south. The better kinds are mostly



MAP OF KOREA

exported to Japan, while the inferior ones are sent to Europe and America. During the war its export to the latter countries suffered on account of the shortage of bottoms, but the ban put on the export of the metal in Ceylon called forth a new demand for it in America, and this, coupled with the Japanese demand consequent upon the rise of the steel industry in that country, made 1917 a record year for its export at Y.1,520,000. But now that all these favorable circumstances have vanished, mining of it is on the decline, at least for the time being.

*Copper.*—Copper mining is still in its initial stage. Of the mines already known, Kapsan in South Hamkyung province, Changwon in South Kyungsang province and Hoochang in North Pyung-an province are worth mentioning. Kapsan mine was first owned by an American firm, the Collbran-Bostwick Development Company, but in 1916 was purchased by the Kuhara Mining Company. Work at this mine has already been started on quite an extensive scale, as a result of which 555,576-lbs. of crude copper was obtained in 1917.

*Zinc.*—Produced in combination with silver and lead, the existence of this metal was long ignored. The principal mines are one at Somindong in Yungbyun district, North Pyung-an province, and the other at Kumduk in Tanchun district, South Hamkyung province. Both these mines were known in early times as silver and lead mines, and the zinc they contained was thrown away. Somindong mine is now being operated by the Fujita Mining Company but the other is not worked yet.

*Tungsten.*—The mining of this metal was started in 1915, when a heavy demand for it came from abroad on account of the war. The metal is spread over many districts and the veins are generally very rich. Of the 40 mines already known Keumkang mine in Kangwon province, Chungyang mine in South Choongchung province and Nungdong mine in North Choongchung province are the principal ones.

Besides the above-mentioned minerals, molybdenum, mercury, tin, asbestos, mica, talc, jade, marble, kaolinite and siliceous sand are found in the peninsula in varying quantities.

*Distribution of Mineral Deposits.*—The distribution of deposits according to the minerals present in the different provinces is as follows:

Gold and Silver: Kyungki, North and South Choongchung, North and South Chulla, North and South Kyungsang, Whangshai, North and South Pyung-an and South Hamkyung provinces.

Iron: Whanghai, South Pyung-an, Kangwon and North and South Hamkyung provinces.

Anthracite Coal: South Pyung-an and Kangwon provinces.

Copper: South Kyungsang and North and South Hamkyung provinces.

Lead and Zinc: North and South Pyung-an and South Hamkyung provinces.

Graphite: North Pyung-an, North and South Choongchung, North Kyungsang, Kangwon and South Hamkyung provinces.

Pyrites: Whanghai, North Pyung-an and South Hamkyung provinces.

Brown Coal: South Pyung-an province and along the eastern coast of the peninsula.

Tungsten: Kangwon and North and South Choongchung Provinces.

Chromium: Found with tungsten.

Mica and Jade: South Hamkyung province.

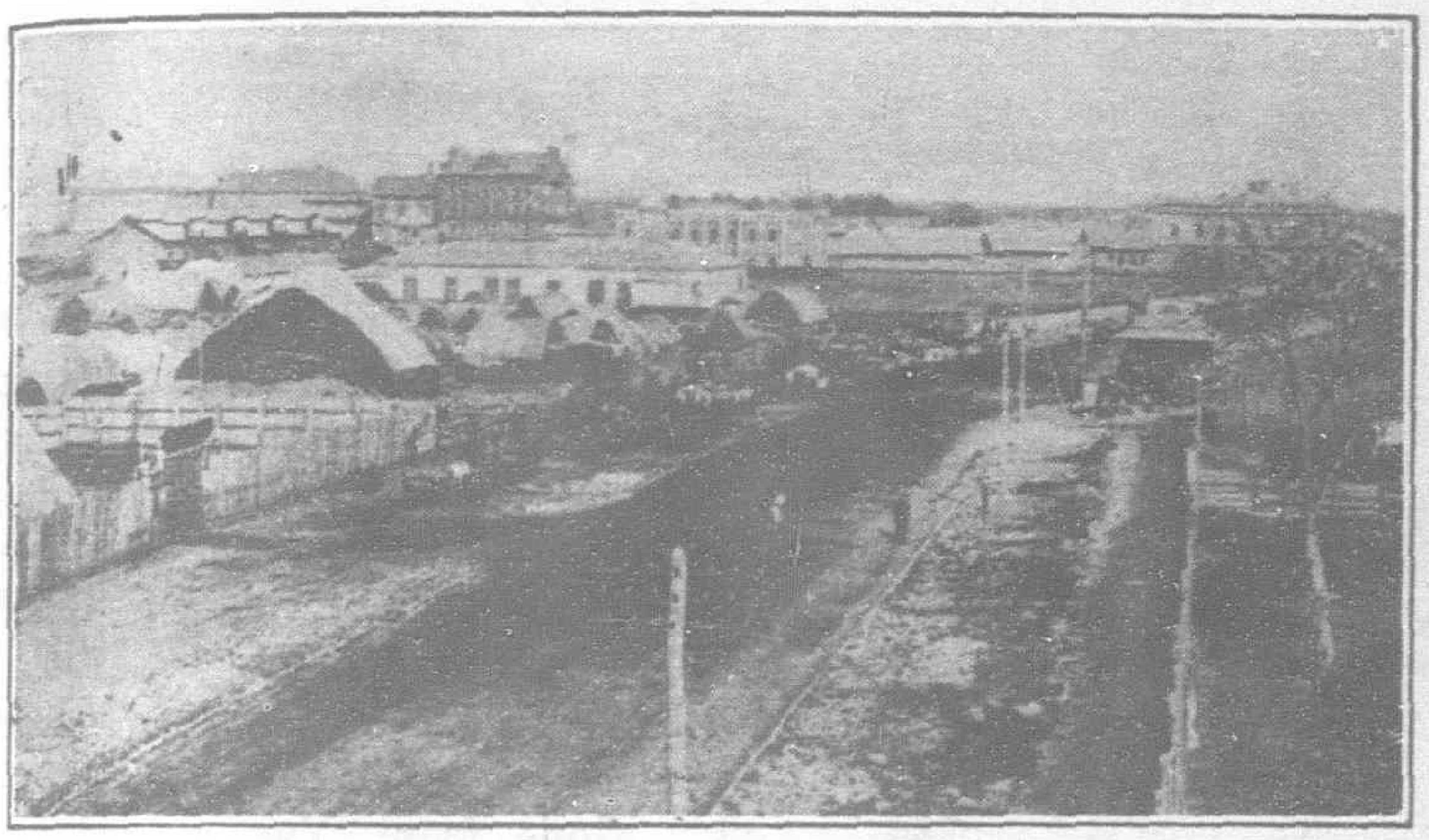
Kaolinite: North Kyungsang province.

Siliceous Sand: South Chulla province.

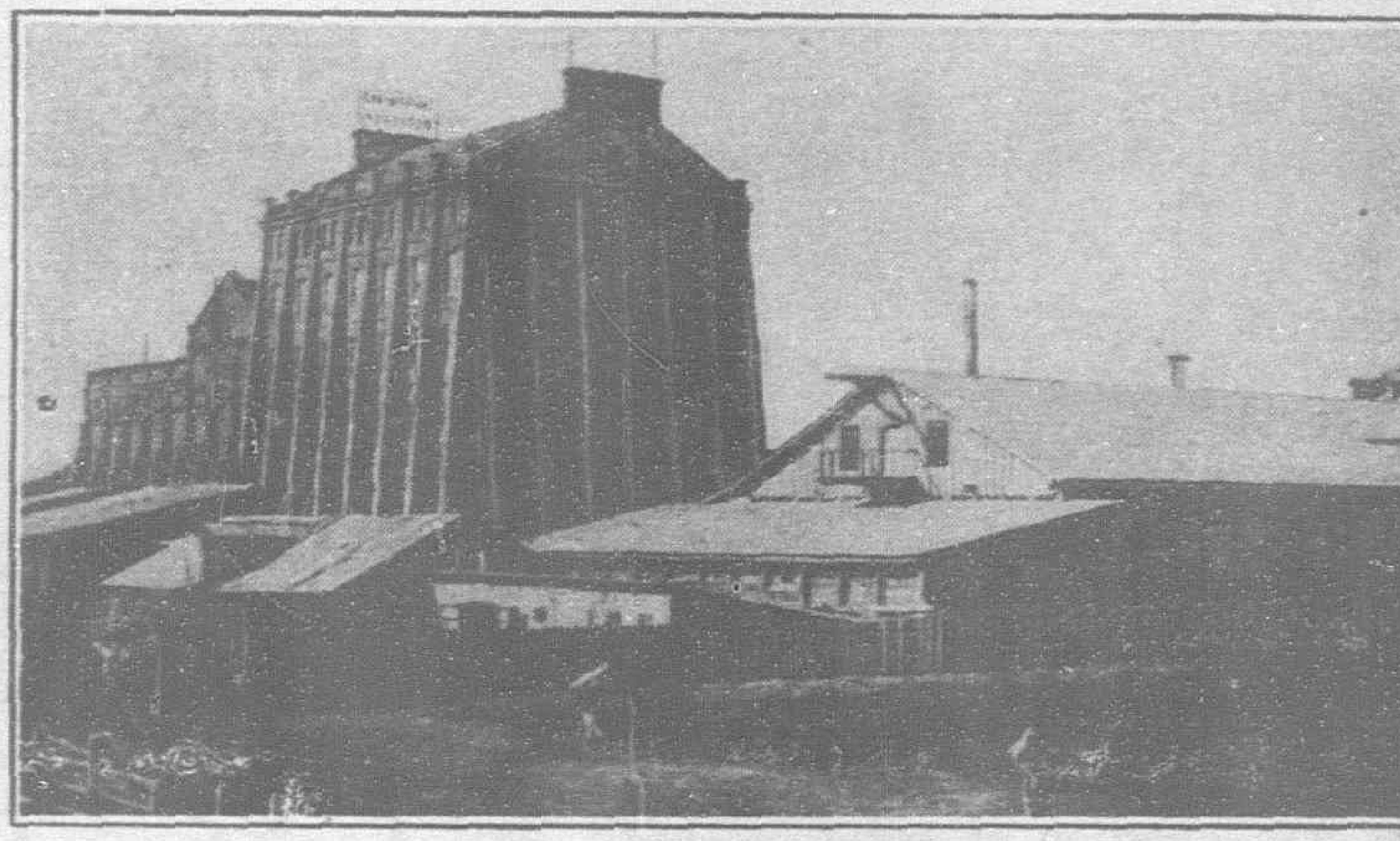
# HARBIN

HARBIN, rich in raw materials, is making remarkable progress in a manufacturing way, especially during the last few years when the general financial depression that prevailed for some time was superceded by trade activity. The port is more a prosperous manufacturer than a trader; and an ever-increasing number of mills, factories, plants, etc., is still evident in the official list of registration of industrial enterprises. There follows some information of important industrial enterprises lately established in Harbin:—

Flour Mills.—Of a total number of 24 flour mills, five were founded by Japanese, 6 by Russians and the rest by Chinese. Since the outbreak of the Russian political troubles, the six Russian establishments have been brought under the control of Chinese. Meanwhile, two large mills have been opened: one is named Tseng Da, capitalized at $2,000,000, situated on the northern bank of the Sungari River and founded by Mr. Wang Ping-an; the other is named Han Hong, established by Mr. Yu Peng-fei, capitalized at $1,200,000 and located in Tung-sze-chia-tze. After a year's work spent in installing machinery and building factories, these two new mills have started to operate having a daily capacity of 360,000-lbs. of "The World" brand flour (Tseng Da) and 304,000-lbs. of the "Locomotive" brand (Han Hong). Furthermore, it is gratifying to note that there are two more flour mills to be established.



Manchurian Milling Co., Harbin



Flour Mill at Harbin

Oil Mills.—In Harbin there are 47 oil mills, of which only three are Japanese while all the rest are under the control of Chinese. As a result of the success of the oil trade last year, five new mills have been established, making a total of 52 in number. They are the Yuen-shun-nee at Shang-fong, the Hun-da at Pai-zai, the Teh-kee at Koo-shan-dun, the Kwang-yuen-jen at Kiang-yen and the Chen-chon at Sing-tze-chang.

Leather Factories.—The leather trade in Harbin has hitherto been almost entirely handled by foreigners who collect raw hides at a low cost and, when tanned, ship them back again to the district where they are sold at high prices. In an attempt to check this waste of money every year, a leather factory capitalized at $200,000 was organized in 1915 by Gen. Chu Chin-lan, ex-military governor of Heilungkiang, but unfortunately little success has been made owing to the insufficient capitalization. Now, another Chinese leather factory occupying premises of 1,000,000 sq. ft. at Chuen-I-wu is being organized by Mr. Chang Feng-ting, industrial magnate of Harbin. The new factory is capitalized at $3,000,000, half of which has been spent in purchasing machinery, and it is provided that capitalization will be increased whenever occasion requires. The machinery has been completely installed and will operate before long.

Glass Factory.—Glass is in very high demand in Harbin since building work in the port has so much increased, and also owing to the local custom of having double glass set on each window frame in the autumn and winter. According to the customs returns, glass imported to Harbin in 1920 was valued at $10,000,000, seventy per cent. of which represented Japanese manufacture. Recently Mr. Chang Sou-hun, a Chinese chemist, has found that the sand on both banks of the Sungari river from Harbin up to Shiou-chen-tze and down to Hulanko, a distance of about 650 *li*, consists of deposits of raw materials fit for manufacturing glass, and experiments have shown that glass made of it is even superior to foreign glass in transparency, but more brittle, which fact, according to Mr. Chang, can be remedied. Following the discovery, a number of capitalists including Foo Han & Co., Chang Yuen & Co., Shen Tai & Co., Chen Tai & Co., Nee Foong & Co., and Tai Yih & Co., have approached Mr. Chang with the scheme to organize a factory with a capital of $10,000,000 at Chuen-1-wu occupying premises of 500,000 sq. ft. Mr. Chang has proceeded to America for the purchase of machinery, and advices have been received that the whole set of machinery will be conveyed to China in a month's time. The large buildings for the factories are in the course of construction and are expected to be completed before September.

Poultry Yards.—The trade in poultry and egg products in Harbin is very profitable nowadays. This is chiefly due to the insufficient supply against high consumption; for Harbin is so wide in area and so densely populated that it needs a very large supply of food stuffs every year. A British firm, established during the great war, sends away large shipments of hens, ducks and eggs every year. Believing in the future of this business some local leading merchants, Messrs. Li Mei-sun, Chang Tze-shi, Shia Tze-gee and Tseng Tze-ku are organizing a Poultry Co., Ltd., with a capital of $3,000,000 at Sung-hwa-tseng, on the northern bank of the Sungari river, having a yard of 500 *mow* in area. The company will, at the beginning, confine itself to raising hens and ducks and will raise cattle later on.

Flour-Sack Making Co.—As mentioned above, there are in Harbin 24 flour mills which require a great number of sacks. At present, one of the two kinds of sacks now in general use, made of cloth and capable of holding 40-lbs. of flour, is wholly supplied by Japanese who have a factory in Osaka with a branch at Harbin, and the other kind is made of cloth and hemp capable of holding 200-lbs., supplied by Indian factories. Some prominent local merchants, Messrs. Yang Han-jen, Yi Cheng-ou and others are organizing a flour-sack making company at Pei-zan with a capital of $1,000,000 (fully paid up). It will start to operate as soon as the machinery ordered from Japan arrives.

# Importance of Yap and Guam as Weather Stations

### By Jose Coronas, S.J., Chief Meteorological Division, Weather Bureau

THE great importance attached to the meteorological stations at Yap and Guam for the purpose of forecasting typhoons is shown from the very fact that, only three months after Yap was in telegraphic communication with Manila, the Philippine government had succeeded in having these two stations established with all the necessary instruments carried there personally by the secretary of the weather bureau and the two observers appointed, to be paid by our insular government. Both stations were in working order by July 1st, 1905, while the cable from Yap had been landed on the Island of Guam during the preceding March.

Such quick action was possible thanks to the great interest in the matter shown by the government of the Philippine Islands as well as by the navy authorities of Cavite, and to the hearty cooperation of the governors of Yap and Guam. And this is by no means surprising, as there was question of something so vitally important not only for the Philippines but for the safety of navigation throughout the Far East.

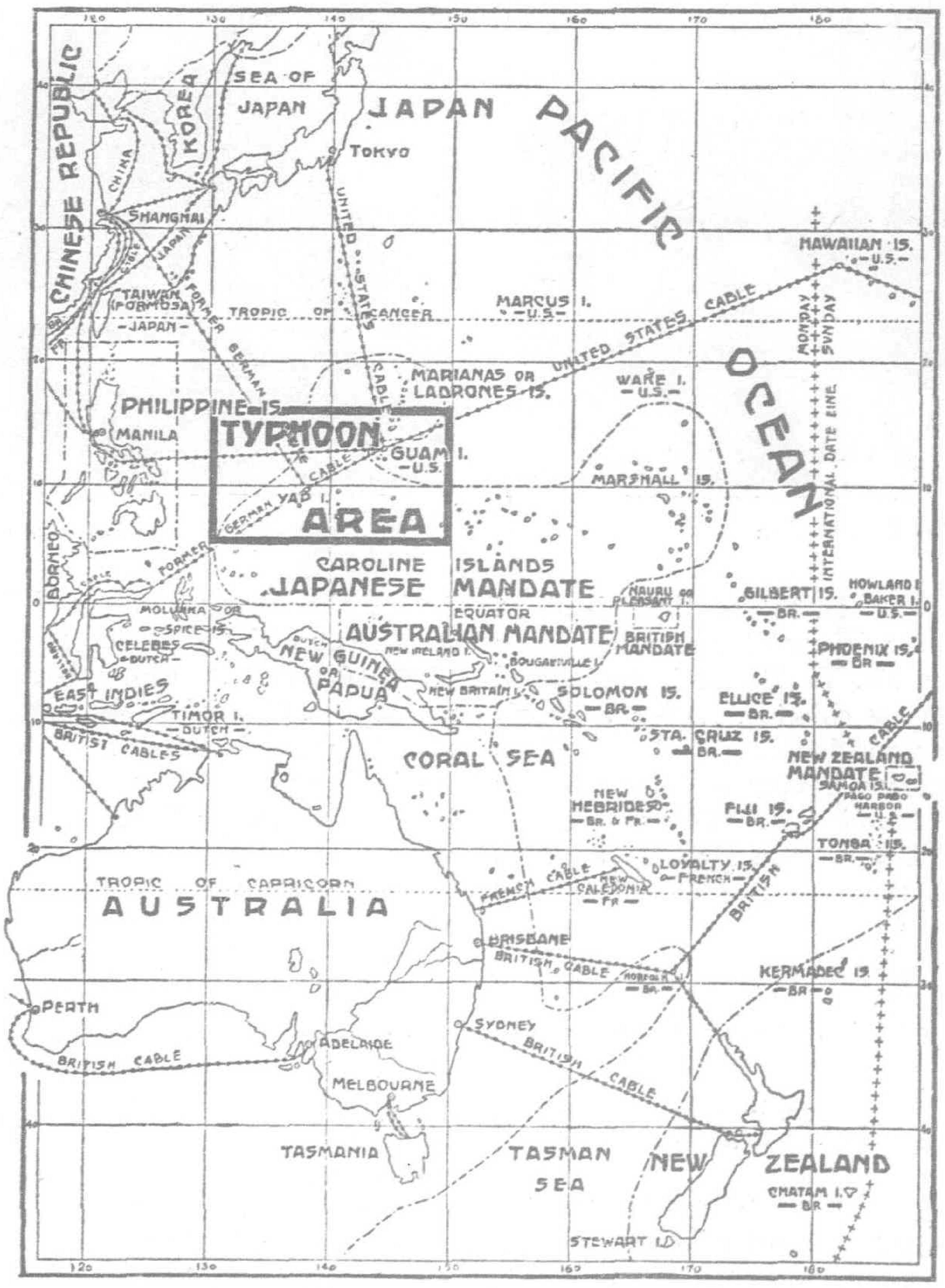
A glance at the map of the Far East will easily convince anyone that, with stations at Guam and Yap, both connected now with Manila by cable, the efficiency of the Philippine weather bureau as an outpost to guard the whole of the Far East against surprises in the line of typhoons would be tremendously increased. Both stations were to round off the system of the Philippine meteorological service toward the east, that is to say, toward the region of the Pacific where the great majority of typhoons are formed.

Yap is situated about 700 miles east of Mindanao in 9° 29′ latitude N, 138° 08′ longitude E and Guam about 1,200 miles east of southern Luzon in 13° 24′ latitude N, 144° 38′ longitude E. Now, the great majority of typhoons originate in the region of the Pacific comprised between 5° and 17° latitude N and between 130° and 150° longitude E. We do not think we exaggerate if we say that 80 per cent., or perhaps even more, of the Pacific typhoons, which have proved to be dangerous for the Philippines, did originate either in the neighborhood of the Western Carolines and the Ladrone Islands, or at least at such a distance from them that their existence and position could be easily traced with the observations of Yap and Guam several days before they influenced the barometer and the weather of the Philippines.

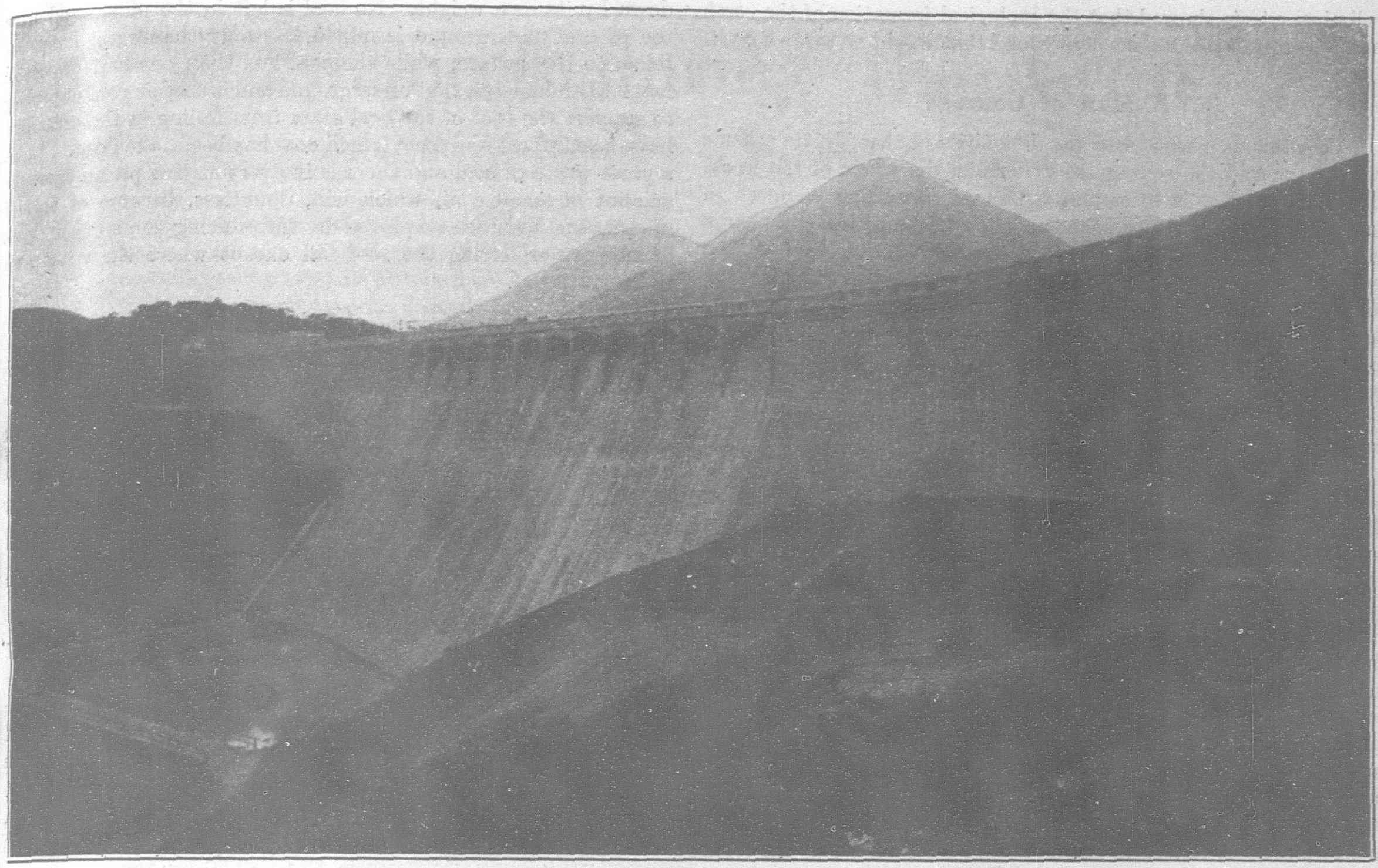
With observations received daily from Yap and Guam not only the existence and position of a typhoon, but also its direction, can be easily ascertained. With the exception of typhoons curving northeastward before reaching our archipelago, experience has shown that typhoons that form or pass between Guam and Yap are very dangerous as a rule for the central and northern part of Luzon, while typhoons that come from the south of Yap or from the neighborhood of Yap, are generally dangerous for Mindanao, the Visayas or the southern part of Luzon.

Captains of steamers have often told me that our typhoon warnings to Hongkong based on the observations of Yap are of the greatest importance and value for steamers bound from Hongkong to Manila. And the reason is quite evident. Without observations from Yap an ordinary typhoon from the Pacific could hardly be announced more than one day in advance before it reaches the Philippines; and as it would take one day more in crossing the archipelago, it would follow that steamers which spend ordinarily about two and a half days in crossing the China Sea, would meet the typhoon near the western coast of Luzon without having been warned of its existence before leaving Hongkong. As the typhoons that form over the Pacific west of 130° longitude are rather rare, it will seldom happen at present that steamers leaving Hongkong for Manila will meet a Pacific typhoon without previous notice.

The promptitude in receiving weather telegrams is almost as important for forecasting typhoons as to have advanced reporting stations. Hence, although we receive telegraphic weather reports of three advanced Japanese stations of the Loochoos situated far off to the east of Formosa and the China coast, it is much to be regretted that they have been received so late for the past four or five years as to lose much of their great practical value for the safety of navigation between Manila and Shanghai or Japan.



Map of the Pacific region showing mandates. Heavily outlined rectangle indicates area in which the great majority of Pacific typhoons originate and in which more than 80 per cent. of the Pacific typhoons which are dangerous to the Philippines have their origin.



Daniel Jaffe's Monument: the Great Tytam Dam Storing Hongkong's Water Supply

# An Engineer's Monument

IT is, perhaps, not too much to say that Daniel Jaffe was the victim of his own high ideals concerning duty. He was, above all else, a conscientious worker. He has left enduring monuments of his ability in Hongkong, but very few people have had the technical training which is essential for a full appreciation of the value of Jaffe's work. His name is, rightly enough, connected in the minds of most of the older residents of Hongkong with the great dam that holds up the many millions of gallons of water in the big Tytam reservoir. What is not generally known is that Jaffe designed the dam and closely superintended every detail of its construction.

To most of us there comes a great day, a day when it seems worth while to have toiled at details of some work in hand. Jaffe's great day must have been on that historic occasion when H.E. Sir Henry May paid an official visit to Tytam and declared the reservoir open. The words of praise from the governor were no doubt appreciated by the skilful engineer, but the thought that he had completed a piece of work that would endure for centuries must have been Jaffe's great reward.

There is the saying that "No man is a hero to his own valet." Life in the little Colony is very much like life in a country town in England in as much as we all know too much about each other for heroes to exist in our midst. There were, however, those who deeply respected Jaffe, for they knew that he spent himself freely in the public service. It is perhaps not too much to say that, if we consider only technical ability, Jaffe has had no rival in the public works department of Hongkong since there has been a public works department. There have been, no doubt, men as industrious, men more suitable to act as the head of a great municipal service. There has, however, been no resident of the Colony, as yet, who has carried out, for the benefit of the public, such a magnificent piece of engineering design and construction, as is the dam at Tytam.

## It Will Endure

Hundreds of "joy-riders" pass along the tops of the dam each month as they trip round the island by motor. They are probably too delighted with the beautiful scenery to give much thought to the dam itself. They may glance at the stone which says that Jaffe was the man who built it. It is only three or four years since the work was completed, but so quickly do Britons come and go in the Colony that not many people who take the trouble to look at the stone could call to mind the features of the man who did the work.

As you pass through the Suez Canal on your way "home" you see a statue to De Lesseps. It reminds one, not only of the triumphs of the man who built the Suez Canal, but of the tragedy of the failure of Panama. The stone at Tytam reminds one of Jaffe's triumph, but also of the tragedy—the price that fate made him pay for it. The seeds of the malignant disease which finally caused his death were almost certainly sown during the excavations for the foundations at Tytam. As the huge dam appeared to grow, slowly, in height, so did the health of its builder grow worse and worse. As the dam increased in strength, the powers of resistance to sickness of its creator grew weaker and weaker. But his zeal never slackened. The building of the dam was what the painting of a picture is to a great artist, a something in his thoughts for years. He knew almost every stone of it. He had tested everything connected with it that could be tested. If you look out over the dam to the sea you will notice masses of concrete which show where the dam was to have been placed originally. The preliminary tests showed that the geological formation of the earth there was unsuitable for the heavy load that would be thrown on it.

### A Man of Courage

Very few men who knew the difficulties of that Tytam scheme would have had the courage to undertake the whole of the work. The usual practice is to employ a famous consulting engineer in London and then to place someone of Jaffe's experience in charge as resident engineer. In this case the very heavy fees of the consultant were saved for Hongkong, but the anxiety and the mental effort connected with the preparation of the plans and the design work were too much even for Jaffe's iron frame. And in the end this truly great public servant died at the comparatively early age of 46 after a long and painful illness. It is to be sincerely hoped that the Colony will see to it that his dependents are provided for properly.

Many men have amassed fortunes in Hongkong. We hear stories of Jones and Brown who retired a few months ago with £100,000. They are lucky—they made it by "inside knowledge" or by chance. Jaffe was a man of an altogether different temperament. He had selected a profession to which he devoted himself body and mind. He did not reap a golden harvest, but he did a very great public service. He did work that will endure as long as Hongkong endures. He, in actual fact, gave his life for Hongkong just as much as a soldier in Trones Wood gave his life for his country. Britons know nothing of how, at last, they laid the wasted body at rest. For years a restless creative mind had overtaxed the resources of a human frame that at first seemed as if made of iron. The creative mind did its valuable work. Britons, of Hongkong, who had just an acquaintance with the reserved man and very earnest public servant who has so recently passed away, will hold in deep respect the memory of one who did what England expects of every Briton.

# The Coal Field at Tatungfu

### Output

THERE are dozens of native coal pits scattered all over this great coal field. The present output of coal, amounting to over 100,000 tons per year, comes exclusively from them, as the few modern collieries that have been started have not as yet reached the producing stage. Coal has been mined in this coal field for centuries and producing pits have, many of them, been in operation for many decades. Their long life is due to the small output, which is seldom more than 30 or 49 tons per day in the case of the best pits. The output from the average pit is about 10 tons per day.

### The Pits and Their Working

All the pits are on or near the outcrop of coal and generally the producing pits are in seams of gentle dip and so free from water as to be able to dispense with pumping altogether. They are all inclined at an angle of about thirty degrees and from 100 to 150 feet deep vertical from the surface. The floors of the pits are in steps, each of which is about 8 inches high, upon which coal is carried from underground to the surface on the back of the coal carrier. On striking the seam, the miners work the coal in a modified form of the Long Wall Advancing System. Through long experience, they show some skill in their method of working. The coal is taken out in very large blocks—each from 20 to 40 feet long and 15 to 30 feet wide. The block is cut on two sides from floor to roof about two feet wide and 15 to 30 feet deep and then undercut for the same depth. In the latter operation, as the miners advance they support the solid coal above them with the small coal obtained in cutting and undercutting the block. When the supporting small coal is removed, the whole block of coal comes down by its own weight. No coal is left in the pillars and every ton of coal underground is mined, but only the largest lumps are taken to the surface, while the coal less than one-half of a cubic foot is abandoned and left underground and is used as goaf or packing to support the roof of the coal seam from falling in the areas that have been mined and from which coal has been taken out. This is a great waste of coal and there is in every native pit an enormous amount of small coal, which will, doubtless, become of value if modern methods are employed by introducing some other means of support or letting the roof fall except where the roads have to be protected.

### Costs

As a rule, the mine operator leases the land from the landlord, who is under the small mines act also the owner of the coal contained in his land, on a rental, established by custom, of three per cent. of the total output. The former employs men on the following terms:—The coalcutter gets about 5 cents for every square foot of area irrespective of height. The coal carrier gets 4 cents for every 150-lb. of coal he carries from the working face to the surface, a distance ranging from 1,000 to 1,500 feet.

### Sale Prices

The coal is sold at pit's mouth from one dollar to one dollar and sixty cents per ton, depending on the quality and distance from the railway station. The former figure is for the Jurassic coal from the middle of the basin, distant from station from 10 to 20 miles, where the coal is much thicker but inferior (comparatively) in quality; while the latter figure is for the coal of the carboniferous age near the rim of the coal field, distant from station 5 to 8 miles, where the coal is thinner but superior in quality. The coal is sold at the railway station from $3 to $3.50 per ton.

## The "Docks Gazette"

The shipping world is fortunate in having such a periodical as the "Docks Gazette" a quarterly magazine, which, in the hands of its new proprietors Messrs. Walter Judd, Ltd., has become a monthly periodical. In it are always articles of interest to dock authorities, matters relating to dock dues, congestions and delays, shipping awaiting berthages, storage, changes in harbor and docks administration, etc. A number of improvements will be noticed in recent issues, and doubtless appreciated by present subscribers and others connected with the shipping world who will be attracted by the contents and useful purpose of the journal. It is issued the first week in every month at 97 Gresham Street, E.C.2, and the annual subscription is 7/6 for the United Kingdom or abroad.

## Japan's Coal Resources

The figures given in the report on coal investigation, by the bureau of mines, Japanese department of agriculture and commerce, show the unmined resources to be as follow: Developed, 822,000,000 metric tons; surveyed, 2,940,000,000 tons; estimated, 5,030,000,000 tons; total, 8,792,000,000 tons. The first two categories together total 3,762,000,000 metric tons, of which it is estimated that a net amount of 1,738,000,000 tons is recoverable. Sand flushing has been used with success in some of the Japanese mines, and if such methods are found to be applicable in any great degree to a large number of the mines, a much larger amount of coal may be obtained. The Japanese engineers estimate that at least one-fourth, or a net amount of 1,257,000,000 metric tons, is recoverable by present-day methods. This makes a total of net available coal resources in Japan proper of 2,995,000,000 metric tons. The figure does not include the resources of North Formosa, estimated at 461,200,000 tons net, or the Fushun mines of South Manchuria, owned and operated by the Japanese South Manchurian Railway, which are estimated at 1,000,000,000 tons.

# Japan's Finances during the Great War

### By *J. Inouye (Governor of the Bank of Japan)*

THE great war has brought about signal changes in the financial and economic position of Japan. While the belligerent powers in Europe have been reduced to straitened circumstances, Japan, like the United States, has been placed in a position of singular advantage in consequence of the war. I shall here briefly review these war changes as they affected Japan, and hazard a forecast as to her future financial and economic status.

From 1915, the year after the outbreak of the war, onwards Japan's export trade attained a marked progress. This originated in the sale of munitions to allied countries, but general commodities soon followed in the wake of war requisites. In the meantime our trade with China, India and the South Seas increased as the export trade of other belligerents dwindled. Our exports during the four years 1915-1918 amounted to Y. 5,400,000,000 and imports to Y. 4,000,000,000, the balance in our favor attaining the high figure of Y.1,400,000,000. Also, Japan's mercantile marine increased from 1,500,000 tons in 1914 to 3,000,000 tons in 1920, the sudden expansion of her foreign trade and the withdrawal of other belligerents' shipping from the Chinese and Indian waters and the Pacific soon after the outbreak of the war having given the impetus to this huge growth of her shipping capacity. Japanese ships have meanwhile gradually extended their sphere of activity to world-wide limits. This increase in Japan's tonnage, accompanied by enhanced freight rates, further swelled her credit account with foreign countries. The activities of the Japanese marine underwriters were another factor that intensified the same tendency, for their insurance contracts increased from the comparatively small amount of Y. 1,700,000,000 in 1914 to over Y.15,000,000,000 in 1920.

Mr. Junnosuke Inouye, Governor of the Bank of Japan

## Japan's Credit Abroad

The excess of her exports over imports and her receipts, as I have mentioned above, in the shape of freight and insurance premiums, have brought about a signal change in Japan's credit standing with foreign countries. Her foreign loans and investments, which barely reached Y. 400,000,000 in 1914, increased to roughly Y. 2,000,000,000 in January, 1921, exclusive of her gold credits accumulated abroad, amounting to Y. 1,000,000,000, which brings the total up to Y. 3,000,000. Her foreign indebtedness, on the other hand, decreased from Y. 1,900,000,000 in 1914 to Y. 1,500,000,000 in January, 1921. Thus Japan's net gain financially for the last seven years has footed up to three thousand million yen.

A specially significant change is to be observed in the position of our specie reserve against notes. After Japan's adoption of the gold standard in 1897 her liabilities to foreign countries steadily increased—the war with Russia and the continued unfavorable trade balance being the principal causes. In consequence she experienced considerable difficulties in maintaining her gold reserve, which in 1914 barely amounted to Y. 200,000,000. Then there came the rapid growth of our export trade, and the consequent influx of gold from various parts of the world, which continued until at the end of 1920 the total amount of our gold holding had risen to no less than Y. 1,100,000,000. This enormous increase in our gold reserve has resulted in an expansion of our notes in circulation from Y. 300,000,000 before the war to Y. 1,500,000,000 at the end of 1920. Bank deposits in general also increased from Y. 2,200,000,000 at the end of 1914 to Y. 8,100,000,000 in August, 1920.

This enormous increase in our resources and expansion of monetary circulation and deposit currency could not but be followed by an increased consumption of commodities and by enhanced prices. The augmented demand both at home and abroad for all varieties of our products gave a signal impetus to our industrial activities, resulting naturally in the promotion of innumerable new enterprises and the extension of existing factories. It would be tedious to deal with each and all of the leading industries of Japan. I shall here mention a few representative goods for export for purposes of illustration:

| | Output in 1914. | Output in 1919. |
|---|---|---|
| Cotton yarn ... ... | 1,666,000 bales | 1,911,000 bales |
| *Raw silk ... ... | 23,474,000 catties | 35,675,000 catties (1918) |
| Paper ... ... ... | 327,614,000 lb. | 519,141,000 lb. |

It may be assumed with absolute certainty that almost all other varieties of our manufactured goods showed similar increases during the period under review. The principal causes of this industrial expansion are increased consumption at home, flourishing export trade, and larger production of substitutes for high-priced imports.

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*Total receipts at Yokohama: 305,000 bales in 1914 and 517,000 bales in 1919.

To sum up, Japan has vastly increased her resources during and owing to the world war, and has greatly strengthened her financial and economic potentiality. Not merely has she succeeded in raising herself from the position of a country which had to work, as a rule, with an unfavorable trade balance and often found it very difficult even to pay the interest on its foreign loans; she now finds herself a creditor country. The tide of fortune has certainly been in her favor. Of course Japan has now to face increased prices, heavier taxation, and a general rise in cost of living, but these cannot be regarded as unbearable burdens to her, if her enriched resources are taken into consideration. The only pertinent question that may be asked by Japanese and foreigners as well is how Japan can manage to maintain her present resources or how she can utilize them.

### The Crisis of Last Year

Failure to avert over-speculation and misuse of credit inucedd by the expansion of currency and bank deposits resulted in the reactionary episode of April 1920, which proved the more serious inasmuch as the preceding boom had been quite unprecedented. The pain was all the keener felt because of the abounding good fortune in the past. But these ups and downs in business are merely temporary incidents, like the ebb and flow of the tide water. Even the blow that has been dealt by the reaction can in no way deprive Japan of what she had piled up during the war. The most judicious way to maintain permanently and utilize the resources thus built up is, firstly, foreign investments. The hoard of bank deposits is more than enough for financing trade and business enterprises at home or to take care of our foreign commerce, and the surplus can well be invested abroad; nay, the financial situation here now is such that foreign investments will prove the convenient way of disposing of the funds seeking outlet. The second is to keep up and further encourage the foreign trade. The factories which were newly erected or enlarged during the war can only with difficulty be maintained in the face of diminished home consumption to-day. If they are to be kept going, larger markets for their products must be sought abroad.

### Future Prospects

Japan's trade balance, which was in her favor till 1918, turned against her after the armistice, and the markets for her exports are now gradually falling away. Apart from the wane of the purchasing power of her foreign customers, this may be ascribed to the rise in the cost of production at home, which acted as a hindrance to our export trade. Reduced cost is, therefore, the primary pre-condition of any revival in our export trade. Already the falling-off in home consumption and in exports is compelling the cutting of hours and reduced production in many lines of industry. This tendency will be more intensified in the future and force lower wages or discharge of laborers, which in turn will conduce to further curtailment in consumption and lower prices, and thus a reduced cost of production will ultimately result.

In conclusion, our big banking resources will suffice to maintain and assist the productive powers of the country while Japanese capital invested abroad during the war will to a certain extent pave the way for our future trading activities. Our markets in India, the South Seas, South Africa, and South America are of a more or less permanent character, and our merchants have gained considerable knowledge and experience while extending their operations to those regions. Our mercantile marine that expanded so enormously during the war has succeeded in establishing connections that will bring into full play the geographical advantages enjoyed by Japan. When all these things are taken into consideration, the conclusion becomes inevitable that Japan can continue to carry on her foreign trade in the belief that she will ultimately constitute herself the financial and commercial centre of the Orient.

## The Salt Industry of Japan

FROM the commercial councellor to H.M. embassy at Tokyo has been received the following report, which is quoted by the *Board of Trade Journal*:—The salt monopoly system was originally introduced into Japan for revenue purposes towards the close of the Russo-Japanese war. It worked fairly successfully at first, but on account of the slow progress of the industry, increasing costs of production and consequent high prices paid by industrial and other consumers, considerable discontent became evident, and there arose a general movement in favor of its discontinuance and reversion to private enterprise, not only in Japan proper, but in Korea, Formosa and the Kwantung Leased Territory. There is, however, a minority opinion in favor of the retention of the monopoly on the ground that emergency requirements will be the better met in time of war, and efficiency improved by unity of control. It is impossible to predict what the commission, at present sitting, will decide, but it is evident that no decision is going to be made without the most careful deliberation, in view of the growing danger of a shortage of salt for industrial purposes.

According to a recent report in the *Asahi*, one of the leading Tokyo newspapers, the commission found that the total production of salt in Japan and her dependencies in 1919 was about 1,053,600 tons, while the domestic consumption did not amount to more than 880,000 tons. It is difficult to accept these figures so far as consumption is concerned, for there was a heavy excess import from foreign countries: 413,417 tons were imported, while exports amounted to 12,767 tons. During the last five years, 1915-1919, exports remained practically stationary, with a tendency to decrease, and last year the decline was very marked, but imports have increased by leaps and bounds. In 1915 they were under 30 tons, and 1919 over 400,000 tons. These figures indicate a strong and growing demand which, according to the estimates of the commission, cannot be met in Japan even if potential extensions of salt fields be realized.

A Japanese chemical expert, Dr. Ikeda, has been for some time attempting production of salt by direct evaporation of sea water, but the results of his experiment are not yet known.

The following tables, showing Japanese production of salt, imports from foreign countries and exports from Japan, serve as a guide in estimating Japan's position in regard to salt:—

PRODUCTION OF SALT, 1916-1919.

| Year. | No. of Farmers. | No. of Farms. | Area of Farms. *Cho.* | Quantity Produced. *Kin.* |
|---|---|---|---|---|
| 1916 | 10,366 | 6,104 | 5,881 | 1,034,202,782 |
| 1917 | 10,501 | 6,079 | 5,881 | 1,003,475,379 |
| 1918 | 10,117 | 5,971 | 5,822 | 675,510,688 |
| 1919 | 9,938 | 5,860 | 5,781 | 981,215,355 |

TOTAL QUANTITIES OF SALT IMPORTED INTO JAPAN, 1916-1919.

| Year. | Amount Imported (*Kin*). | Value (*Yen*). |
|---|---|---|
| 1916 | 188,749,000 | 1,270,459 |
| 1917 | 387,483,000 | 4,484,132 |
| 1918 | 595,822,000 | 9,625,243 |
| 1919 | 876,737,000 | 17,119,375 |

EXPORT OF SALT FROM JAPAN, 1916-1918.

| | Export to Foreign Countries. | | | Export to places in Japanese Empire. |
|---|---|---|---|---|
| | To Asiatic Russia. | Other countries. | Total. | |
| | *Kin.* | *Kin.* | *Kin.* | *Kin.* |
| 1916 | 86,278,468 | 255,576 | 86,534,044 | 25,484,337 |
| 1917 | 113,400,598 | 202,280 | 113,602,878 | 25,988,581 |
| 1918 | 104,997,512 | 8,024 | 105,005,536 | 27,247,919 |

[*Note.*—*Yen*=2s. 0½d. (par). *Kin*=1.323-lb. *Cho*=2.45 acres.]

**The Far Eastern Review**

A Monthly Review of Far Eastern Trade, Finance and Engineering, Dedicated to the Industrial Development and advancement of Trade in Far Eastern Countries

ENGINEERING FINANCE COMMERCE

5 JINKEE ROAD, SHANGHAI CHINA

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# A Victory for Peace

WITH the call for a Pacific conference, THE FAR EASTERN REVIEW terminates a campaign of education of fundamental Far Eastern and Pacific problems. In the interests of peace and good-will the story of Japan had to be frankly told to the American people and as the oldest American publication in Asia with a full knowledge of inside facts, it devolved upon us to shoulder the unpopular task of telling the truth about events that have been clouded and concealed behind a propaganda having for its purpose the precipitation of hostilities between Japan and the United States.

Jingoes, war-makers, agents of armageddon, propagandists and general disturbers of the peace of nations, have been silenced by the facts. The only answer vouchsafed to the articles in the FAR EASTERN REVIEW has been an underhand, unethical counter campaign calculated to destroy the usefulness of this publication as the exponent of American ideas. A year ago the war-makers held the lime light and it became unpatriotic in certain quarters to express thoughts or ideas that conflicted with the popular craze for immediate war with Japan. The principle had been accepted that while war with Japan was not inevitable it was a possibility, and the patriotic thing to do was to discredit her beforehand, so that, in the event of hostilities, she would stand alone without a friend in the world.

Conditions have changed. The agents of armageddon are now scrambling aboard the band-wagon and indignantly resent any insinuation that at any time they were in favor of war. They are now the original friends of peace. It is better so.

It is only necessary to gather the consensus of American opinion as expressed through editorials in the prominent newspapers, in other to convince ourselves that the war-makers never had a chance to make headway against the every-day horse sense of the American people. THE FAR EASTERN REVIEW emphasized over a year ago that there "ain't going to be any war," and there ain't.

The Anglo-Japanese alliance will be renewed with modifications, whose purpose will be to make certain that the treaty will in no way disturb British relations with the United States. The calamity howlers who swarmed out from Peking to scare the world with the prophecies of war if the treaty was renewed, have been silenced through events at the British imperial conference which decided the fate of the alliance. This has been a great set-back for the jingoes.

The Russian Soviet and the Germans have been looking gleefully toward a war between Japan and America, but as the *Philadelphia Record* points out:

"It might serve the purposes of the Bolshevists and the Germans to have either the United States or Japan put out of business; but if wishes were horses beggars might ride, and Prussia and Moscow could divide the world between them, or fight for the whole of it. But there is going to be no war, and the United States and Japan will remain powerful nations, which Junkers and Bolshevists will do well to take note of."

Especially disconcerting to the war-makers were the reports of Mr. Charles Edward Russell, who was sent to Japan by a New York newspaper to study conditions and ascertain what foundation there may be for the belief that the island empire entertains dark designs upon the United States. Mr. Russell is unable to discover the terrible monster that plans to devour the earth and against whom we must ever be armed to the teeth.

What he found was a Japan whose chief need is not more land but more raw materials to help change it from an agricultural to a manufacturing country; a Japan that, like other countries, has its jingo and militarist factions who get into power, make blunders and are suppressed by the larger sentiment of the nation; a Japan in which intelligent Japanese already admit the mistake of high-handed methods in Corea; a Japan that means to return Shantung to China; a Japan that has no dark designs upon the Philippines.

That will be very disappointing to our bogey-makers and sword-shakers, adds the Muskegan chronicle; what they insist upon is a Japan that causes our flesh to creep and our blood to curdle. They can be satisfied only with a Japan that keeps us awake and shivering in our beds and causes us to get up and ask to be taxed a billion dollars or more for battleships, and other scores of millions or more for war. To them the reports of the Russell investigation will prove very disappointing.

The Minneapolis Journal, with a keen insight into Asiatic affairs, bears out the attitude of THE FAR EASTERN REVIEW in the following terse editorial:—

"Before the great war there were four factors in Asiatic politics tending to create friction. Foremost of these was the ambition of Russia to bring China, India and Persia under her domination. This forced upon Great Britain diplomatic activity in the Far East to safeguard India, the keystone of her empire. At the same time, it stimulated the military spirit in Japan to protect herself. Berlin, ever jealous of London, was only too eager to help play the Russian game in Shantung.

"Until 1914 the United States had never taken a decided stand in Asiatic affairs, except to commit the powers to the 'open door' agreement. But in the Wilson administration the United States began a blind and inconsistent policy of meddling, which only added to the talk of war with Japan. The seed sown then is blossoming now.

"Though America's only Asiatic policy concerned the preservation of China, President Wilson threw this tradition aside when in Paris he acquiesced in Japan's claim to Shantung. On the other hand, when the Japanese army went into Kamchatka, Washington made a protest as if it really had an interest in things Siberian.

"The Harding administration has made no declaration as to our Oriental policy, except to demand the internationalization of Yap. This delay may indicate realization of the dangers and a desire to study and arrive at a real solution. With Germany banning emigration to America and preparing to help Russia in colonizing Siberia, the four elements to Asiatic politics may come to the fore again as centres of friction.

"Unless America understands the age-old movement, and realizes Japan's necessity to be prepared against the Berlin-Moscow threat, the American people may find themselves pushing a German hope. That hope is that America will war with Japan and weaken her so that Germany working with Russia could rebuild its empire in Asia."

This reflects the almost unanimous opinion of the more influential American newspapers. When we add to this the opinions of leading bankers and manufacturers, represented by such men as Mr. Thomas W. Lamont, Judge Elbert Gary, and others, who have consistently labored to counteract the pernicious activities of the war-makers, the chances of any break in the friendly relations between Japan and America may now be considered as a thing of the past. Most of the irritation arose out of the wobbling, pin-pricking policy of the past administration, and the half promises held out to the Chinese that America would come to their armed assistance in the event that Japan crowded her too far. The reason why the campaign has been permitted to drag along is due largely to the fact that those who were most prominent under the last administration in creating these issues, are still in positions which enable them to keep alive the controversy, and mislead their Chinese friends into believing that they still influence the American government.

The attitude of sensible American financiers and business men is summed up in an article in *The Journal of the American Bankers'*

*Association* from the pen of Mr. A. Barton Hepburn, chairman of the advisory board of the Chase National Bank. Mr. Hepburn says:

"Japan and the United States were both made creditor nations by the war. There is no question about the credit of either one of them. They are both on the gold standard, and to these two nations more than to any other and all others the world is looking for the preservation of the gold standard and the protection of the credit fabric of the world. We have no time nor occasion to 'scrap' with each other, but should work in unison for the welfare of the world.

"The Japanese do not want to fight us, they wish to live upon friendly, even cordial, terms with us. But they do want to live, and they must expand. They are not allowed to migrate to our country or Canada, and we froth at the mouth when we hear that they are getting a foothold in Mexico. What else is there for them to do but to expand on the Asiatic continent? We certainly would were we similarly situated, England would, any country would.

"And why cannot we let them follow this natural course without this continuous nagging? It only exasperates them, and we have no intention of doing anything about it. This country would never go to war over the Shantung question; it would never go to war to preserve the open door in China. England, with Hong-Kong and outlying territory, is as much an offender as Japan can be; France is similarly situated. Japan has succeeded to the rights of Russia and Germany, acquired in both instances as the fruits of victory in war. Her foothold at Dalny and Port Arthur and the possession and ownership of the South Manchurian Railroad came to her as the result of the Treaty of Portsmouth, and as part compensation from Russia. China is no worse off, but far better off, to have this railroad and rights in the possession of the Japanese, for instead of a military line for strategic purposes as it was under the administration of Russia, it is now a great commercial railroad, serving the interests of the people and affording them an immediate market for everything they can raise.

"No one rejoiced more than the United States when Japan drove the Germans out of Kiaochow and closed that port as a base for German submarines and German commerce destroyers. By a treaty with England and France, she was the acknowledged successor to the German rights in Shantung. Why not let her enjoy the fruits of her victories without this constant nagging? To turn Shantung over to the Chinese government now would be surrendering the territory to banditry and outlawry, since the central government of China is without funds and without resources and without power that any one respects. Japan is quite ready to surrender the sovereignty of the country to China; she naturally seeks commercial advantages and the protection of her commercial interests. She is very human and is actuated by the same impulses that would actuate our nation."

THE FAR EASTERN REVIEW has complied with its duty. It will continue to be a friend of Japan and of China, and at the same time preserve that spirit of independence and one hundred per cent. Americanism which has characterized its policy of giving a square deal to all national interests in this great field of conflicting international policies and trade rivalries.

* * *

# Manchuria

## The Land of Opportunity

THE unsavorary criticisms directed against the management of the South Manchuria Railway Company in both houses of the Japanese parliament has resulted in the appointment of a new president and the adoption of a definite policy. The selection of Mr. S. Hayakawa to head the new board, and the appointment of Mr. Y. Matsuoka to the directorate, to those conversant with Japanese politics is an indication of the government's intention to develop Manchuria and near-by regions along lines that will not only safeguard Japan's own economic security, but open the door to complete harmony with China and other nations through business co-operation. Mr. S. Hayakawa is a banker, one of Japan's leading financiers, intimately associated with the big transaction of the nation since the days of the Sino-Japanese war. He was one of the founder's committee of the S. M. R. Company and had much to do with the formulation of the policy that has enabled this line to reach a foremost place as one of the great civilizing and developing instruments of the world. For, cavil as we may about Japan's foreign policies, when all is said and done, the South Manchuria Railway has equalled, if not eclipsed, the record of some of the more world-famous railways that have reclaimed the wilderness to civilization. It created the great soya bean trade, developed the coal and iron resources of Manchuria and transformed Dairen into one of the most up-to-date and busiest ports of the world. It is of supreme importance as a main artery of communication with Europe, an international highway that for many years must serve as one of the great links between the East and the West. It is no wonder, therefore, that one of the founder's committee should take pride in its achievement and consent to assume control of its affairs at a time when it was the target of unfavorable criticism.

Those who still think of Manchuria as it was twelve or more years ago, when American and British merchants were loud in their denunciations of Japanese policy in those regions, and who still fondly cling to the delusion that it is a closed territory in which no one but a Japanese can do business, will resent any statement which deprives them of this moth-eaten indictment of Japan. It is now "olo custom" and traditions die hard in the Far East, where truth has been mutilated and massacred by years of propaganda.

Japan's policy and interest in Manchuria were again clearly and emphatically set forth by the new president of the South Manchuria Railway on his arrival at Dairen. He said:

"Manchuria and Mongolia have a very important bearing upon securing the economic existence of the Japanese people, for, their development, in addition to meaning a general economic development of the Japanese people, it is also directly concerned with the grave issues concerning the problems of population, foodstuffs, etc.

"The development of these regions has such a serious significance not only with Japan, but also with China. For, it is in these same districts that the so-called Sino-Japanese co-existence and co-prospering can be realized, and it is patent that this realization will go a long way towards consolidating the peace of the Far East and promoting the welfare of mankind in general.

"This company, as you all know, has been brought into existence by great sacrifices on the part of the Japanese nation. Its mission lies in the development of Manchuria and Mongolia, which has a serious significance for both Japan and China — indeed for the whole of the Far East. The development, I am referring to, is, and must be, fundamentally economic.

"It is my intention to assume the management of the company with this mission for the warp, and the Sino-Japanese co-existence and co-prospering for the woof, of my activity, and I hope that you will take due note of this point.

"Again, this company is a sharestock or commercial concern and is expected to distribute a reasonable dividend to its shareholders. It has this obligation besides the national mission above mentioned to fulfill.

"Although this company is a Japanese corporation, it is, I need hardly point out, operating railways and carrying other enterprises in Chinese territory, part of the important world's highway. These two points must well be borne in mind. Then, this company may be called the greatest international property or enterprise held by Japan abroad. The company's activities are, it must be also borne in mind, under the constant survey of the powers.

"The world's situation has changed and is changing in many respects from what it was at the time this company was first established. We cannot be too careful in every move, and, following the world's progress, we should adapt ourselves thereto; as to the Sino-Japanese relations, we ought to do our utmost in cultivating a good mutual understanding, and should aim to make ourselves an effective link of the Sino-Japanese economic league.

"Towards all nationalities, we must observe loyally the principle of equal opportunity and be guided by the spirit of harmony and co-operation, and should demonstrate to the world the open and fair attitude of the Japanese people. Free competition is what we do expect and welcome heartily. We shall meet any and every competitor like a sportsman and should hope to win by merit only."

The above is a clear cut statement of Japan's ideas as to equal opportunity and the open door in regions where she has paramount interests. It fully answers the accusations that the "door is closed in Manchuria," that "where the Japanese go in, the white man goes out." Americans are prone to overlook that the reverse of this last catch phrase is more to the point, and compels the Japanese to seek their economic future in Asia. It is largely the same in Manchuria as in Shantung, where at one time American trade associations were declaring that the archives of the consulate at Tsingtau were filled with records that would prove Japanese discrimination against American goods. On investigation, the statement was found to be a pure fabrication. There was no record in the consulate of any discrimination against American firms in Shantung. The consul, however, did state in his official report to the state department "that if Americans and Europeans had not availed themselves of the many business opportunities in Shantung, it is because they were preoccupied with other more pressing and important matters arising out of the war." He concluded by stating "It has not been due to any unwillingness on the part of the Japanese authorities to extend privileges to others than their own nationals." The American consul then went on to state that the civil administrator of Tsingtau had offered all inducements so that American citizens could unite with Japanese in developing the commercial and industrial possibilities of the port.

The situation is very similar in Manchuria. Americans do not go there, because they have been taught to believe that competition with the Japanese is impossible, that all manner of obstacles will be placed in their way of doing business with the Chinese. There is no doubt from information that comes to us from reliable sources, that Japanese commercial competitors have helped to create this impression by bragging and menacing methods, but we are satisfied that this never reflected the policy of the Japanese government or that of the South Manchuria Railway authorities, and that, if the foreigner had taken his complaint direct to the proper authorities, there would have been no good reason for him to nurse a grouch. Foreigners, Americans especially, have permitted themselves to be guided by the experience of a few firms who harbor a lasting grievance against the Japanese, arising out of close competition in other parts of China. They have developed a clear case of "cold feet" in respect to Manchuria.

The declaration of the new president of the South Manchuria Railway should set at rest all these old stories, and Americans and British should take him at his word and co-operate for the common development of this wonderful region. If Manchuria, Mongolia and adjacent territories are to serve as the reservoir for the overflow of Japan's millions, an era of prosperity will come to the Far East such as will eclipse all past booms in other parts of the world. A company whose property is now valued at $700,000,000 gold, expending at least $15,000,000 a year is in America, and an equal amount in England and other countries, whose program calls for the expenditure of $200,000,000 in the next four years, whose trade in engineering supplies is more valuable than the whole of the Chinese railway system, is not going to jeopardize its success, by resorting to methods of discrimination, that, in the end, must earn for it the censure of other nationals and make difficult any important financial co-operation or loan negotiations. Manchuria, Mongolia are the lands of to-morrow, the lands of opportunity in Eastern Asia, where the present generation will witness a repetition of the great developments that followed the opening of the American Far West. The world should take Japan at her word, stop grouching, and come in and co-operate in the opening up of a new centre of industry and civilization.

* * *

## What the Filipinos Really Wanted

THE Wood-Forbes mission has discovered that the Filipinos really wanted immediate *dinero* instead of immediate independence and they needed it now, if not sooner, in order to save themselves from going on the rocks of bankruptcy. A hurry-up call from General Wood got the money and now the Filipinos and Americans are clamoring for him to stay with them until the insular coffers are again replete with the cash that is expected to pour into them under his supervision of affairs. When this is accomplished, the Filipinos will probably once more set up the cry of independence with or without strings.

Our little flier into colonial administration without a fixed policy came nearly ending in a calamity, for had the idea of the last administration been carried out and the Filipinos given their independence, it would not have been long before they went on the rocks, and compelled to seek assistance from the international money-lender, with the fate of China as the inevitable aftermath.

Good old philanthropist is our uncle, after all is said and done, always with his hand in his pocket to help some one outside the country.

* * *

## French Engineering in China

IN the last number of THE FAR EASTERN REVIEW we inadvertently referred to the Cie Générale d'Extrême-Orient (awarded the second prize for the best design for the Yellow River bridge), as a Belgian concern, when, as a matter of fact, it is French, with head offices in Paris, and represents the strongest combination of French manufacturers that has ever entered the Chinese market. Especially is this true in the engineering sense, as the company are agents for several of the greatest French engineering houses, notable amongst which are the Société de Constructions des Batignolles, the foremost railway constructors in France, the builders of the Yunnan railway and of many others in French colonial possessions; the Cie de Fives Lille, the world-famed engineers whose installations are models of efficiency; the Decauville, whose light railway specialties are standard throughout the world, and so on down a long list of French manufacturers, whose names are closely associated with the advance of France in engineering development, and allied with the strongest French financial institutions. Its entrance into the Chinese field and success in the bridge competition provides evidence of national activities following the armistice, and as one of the reasons underlying the remarkable recovery of French foreign trade in the current year due to a large extent to trade organization.

It may be accepted that the above combination represented by the Cie Générale d'Extrême-Orient will carefully watch and protect French engineering standards and specifications in the development of Chinese railways and other engineering undertakings. The head of the great Batignolles company, M. Eduouard Gouin, was the expert and representative of the French engineering interests who collaborated with the consortium in the initial negotiations looking towards the adoption of a standard set of specifications for Chinese railway rolling stock and accessories, and spokesman for those French interests who in the past have received so little benefits in the way of orders for materials, after having furnished nearly two-thirds of all the capital required for the construction of Chinese railways. All the Russian lines were built with French money, half, or perhaps two-thirds of the Belgian lines, were financed in France and one-half the interest in the Chinese Central Railways, Ltd., which constructed the British section of the Tientsin-Pukow Railway and holds the rights to the Pukow-Sinyang line are French, in addition to a quarter interest in the Canton-Hankow line. With the end of the war, and the necessity of building up French industries, one of the first matters that claimed the attention of the engineering trade, was to obtain, as far as possible, an equitable participation in the distribution of orders for materials from enterprises abroad that their capital had made possible.

France realized that to pay off the foreign indebtedness incurred during the war, she would have to systematically reorganize the country for the purpose of exporting products with which to pay for the materials of all kinds purchased during the war. One of the most notable steps to this end was the reorganization of the

French ministry of commerce, for the double purpose of co-ordinating private export efforts and of placing at the disposal of French foreign commerce, the information necessary to its efficient action. As a result of the law, a national foreign trade bureau was created, official foreign trade bureaus and French chambers of commerce organized in foreign countries, and commercial attachés and agents appointed to various countries. In other words, France set to work to follow the lead of Great Britain and America by creating all the necessary facilities for the proper expansion of their trade interests and co-operation with their merchants.

The national foreign trade bureau is organized in such a way that it can centralize economic information of all kinds which comes from the French commercial agents, chambers of commerce and other sources abroad and disseminate the information at once to interested manufacturers. The bureau also keeps foreign markets advised of the facilities provided by French manufacturers for meeting their requirements.

In addition to these official instruments for advancing their trade interests, a National Bank of Foreign Commerce was created under the law of March, 1920, for the special purpose of facilitating exports by advances on long term commercial paper or by allowing credits against various approved securities, and by placing at the disposition of French merchants information as to the financial standing of would-be purchasers.

The success of French merchants in selling their products abroad since the armistice has been greatly facilitated by these official aids, and when these have been further expanded and the French commercial agents abroad become more firmly settled in their work, greater results are confidently expected to accrue to the nation as a whole.

* * *

# Hongkong's Industrial Future

A SIDELIGHT on the reported activities of British interests in obtaining extensive coal mining rights in Kwantung province appears in a recent special number of *The Times*, whose correspondent in Hongkong reveals the formation of a powerful syndicate whose object is to exploit and develop the surrounding country from a coal-bearing and metal-producing aspect. Large concessions located in the new territory have already been obtained from the British government, and negotiations are still pending with the Canton government for concessions in the rich province of Kwangtung. According to this report, there is every prospect that within a short space of time coal and iron will be able to be delivered in Hongkong at prices which will cause little short of a revolution amongst the industrial interests of the Far East. The scheme is one, he says, which, if it matures, will effectively place Hongkong very prominently on the map of the world's big industrial centres. From the shipbuilding point of view, Hongkong, with its native labor, would then become a serious rival to even the world's biggest yards.

The scheme referred to by *The Times* correspondent is the one covered by the agreement entered into on April 23, 1920, by Major Louis Cassel on behalf of a Sino-British corporation called the Kwangtung Collieries, Limited, and the Canton military government represented by Mu Ying-hsin, military governor, for prospecting and working coal concessions in various specified districts of Kwangtung province. It is a Hongkong company capitalized at $10,000,000. The full details of this deal were given in the December 1920 number of THE FAR EASTERN REVIEW. It provides for a directorate of three "Europeans," three Chinese and one of "British nationality," elected by the others.

In response to a question asked by Mr. B. Kenyon in the house of commons on August 5, as to whether the government was aware that the concessions referred to established a practical mining monopoly and were opposed by the American group in the consortium, Mr. Cecil Harmsworth, the under secretary for foreign affairs replied that considerable misunderstanding existed as to the real nature of the concession and explained that:

"The agreement was not monopolistic, but confers prospecting rights for coal in certain districts.

"It allows fifteen months for selection of the mining areas and excludes 51 mines in these districts which are already granted to other parties.

"The concessionaires are not a British company but a Chino-British company formed on lines which have proved mutually beneficial elsewhere in China.

"The British firms interested include those of the highest standing in the Far East and the agreement represents years of effort.

"It will relieve Chinese and foreign shipping in South China from the serious handicap imposed by dependence on imported coal.

"The agreement has been negociated with the provincial authorities strictly in accordance with the Chinese government's rule that the terms must be settled with the provincial authorities before ratification by the central government.

"The British minister made a formal application for ratification on October 30th last but owing to certain difficulties the agreement was referred back for further discussion of the points in detail with the Canton authorities."

A change has taken place since then in the completion of the Canton government, and instead of the military being in power, Dr. Sun Yat-sen is at the head of a constitutional government, and, according to reports, is not in favor of endorsing the agreement, under whose terms an initial payment of $1,000,000 was handed over to the former officials.

Considerable light is thrown on the entire matter by the report of the economic resources committee which was appointed by the Hongkong government last year to study the economic resources of the colony with a view to their development. Reading between the lines of this excellent report it is easy to see that the Cassel concession is the key to the great industrial future of the colony by providing the coal that will permit the iron ore of the new territories to be converted into the steel that will, in turn, bring about the industrial revolution prophesied by *The Times* correspondent.

SHIPBUILDING—In reporting upon the possible expansion of the shipbuilding industry, the commission says that all supplies of materials, such as steel plates, sections, billets for forgings, pig iron for castings, etc., are imported from Britain or America. As compared with Great Britain, Hongkong is thus at least two months later in commencing work on a contract, due to the time required to ship materials out. In addition, the freight on materials adds at least 10 per cent. to their cost. Auxiliaries of a special nature are also purchased from home or America and are affected in the same way as steel by time of delivery and freight charges. Timber for decks, ceilings and cabin furniture, in the case of teak or hardwoods, is procured from Siam or Borneo, and soft wood, such as Oregon pine, from the Pacific coast. Timber cannot, however, be considered as costing more in Hongkong as Great Britain has to import both hard and soft woods. The foregoing are the principal items for which the colony has to rely on outside sources for supplies, but there are many other details in the outfit of a vessel which have to be purchased abroad and which, if the demand were sufficient, could be economically produced in Hongkong.

An important factor in the absolute determination as to whether shipbuilding in Hongkong is ever to be a progressive industry is the production of iron and steel in China. If this ever eventuates Hongkong as a shipbuilding centre will be well established.

In the event of minerals being procurable in South China, adds the report, steel works would have to be on a very large scale to cover the large variety of plates, sections, etc., used in shipbuilding. In Great Britain, steel works' output is specialized, some firms turning out plates only and other firms sections only.

Auxiliary machinery is specialized in by many firms in Great Britain and could only be turned out economically in Hongkong if the demand were sufficient.

Local China fir is only suitable for rough work. Whether supplies of suitable hardwoods to take the place of teak and Borneo hardwoods are procurable within easy reach of Hongkong, is a matter which might be investigated.

Freight rates on timber from Borneo to Hongkong have recently been reduced and timber merchants are increasing their plant with a view to a large output in the near future.

Pig iron, in large quantities, has been shipped from Calcutta to Japan, the Mitsui Bussan Kaisha being the principal shippers, and the material being used, it is said, for shipbuilding purposes in Japan. No doubt, the report adds, the government is kept fully advised for what other purposes it is used.

It has been proved that Hongkong is quite capable of building practically any type of merchant ship as cheaply as, or possibly cheaper than, any other country, Japan included. To be quite independent, however, cheap supplies of pig iron and coal to run rolling mills are necessary. *With a guaranteed supply of coal from nearby provinces in China, the question of the establishment of rolling mills is purely a matter of time,* and there would then remain only the question of auxiliary machinery. This, it is assumed, will have to be imported from England or the United States for some years to come, as Hongkong has neither the expert advice nor the facilities for manufacture.

LABOUR.—This is plentiful, but to maintain efficiency busy yards are essential. Efficiency has increased since the introduction of steel ships. In connection with apprentices, a system of technical education would prove of great benefit in the way of training them in modern practice. A study of the English language should be combined with their studies in engineering.

PUBLICITY—The primary disability Hongkong labors under at present is that few shipping people at Home have any real idea of Hongkong's capacity for shipbuilding. This was particularly in evidence during the war when, with all the crying need for ships it was with the greatest difficulty, and only in the latter part of the war, that sufficient shipbuilding material was obtainable to keep the yards fully employed. Since then officials of shipbuilding firms in Great Britain and in America have inspected the local yards and have been very favorably impressed.

The possibilities of getting ships built and repaired in Hongkong should be kept very prominently before shipping people in Great Britain, America, Canada and Australia, and the colonial office should be well advised of the work done in Hongkong and the capabilities of the local yards When the colonial office were informed, towards the end of the war, practical results accrued.

The capabilities of Hongkong as a shipbuilding centre were also brought strongly before the Home authorities in 1917 when a Hongkong built vessel was docked in Liverpool for inspection and a number of experts were asked to express their views, which were very favorable.

MINING.—In discussing the possibilities for mining development, the commission says that it may be taken for granted that the island of Hongkong itself is devoid of minerals of economic value, but this is by no means true of the new territories. Here copper, silver-lead, tin, wolfram and iron have been discovered and large sums expended in the attempt to develop them. With the possible exception of iron ore their exploitation, however, has not turned out favorable. The iron ore deposit now being worked is of large extent and of excellent quality, and may one day prove of inestimable value to the colony. The exploitation of this deposit has been retarded by the absence of a suitable coke-making coal deposit. It is, however, the report goes on to say, extremely doubtful if a suitable coal deposit exists within the colony within reasonable distance of the iron and the chances of the Colony ever being supplied with iron made from local iron ore and melted with coke produced from local coal are extremely remote.

The activities of British interests in securing control over the most important coal deposits in the adjacent Chinese province of Kwangtung, and which, according to reports, resulted in their obtaining a practical monopoly of undeveloped coal deposits from the Canton government can be better appreciated after reading the above extracts from the report of the commission. The new territory has the iron but lacks the coal necessary to convert this into steel and lay the foundation of a great industrial future for the colony. Hence the negotiations to secure this necessary coal supply from Kwangtung.

Regarding the other minerals, the fact that previous attempts at development have not been encouraging does not necessarily postulate the absence of workable deposits, says the report. On the contrary, the knowledge of the existence of so many minerals prompts the belief that vigorous, intelligent and systematic prospecting might reveal ore occurrences of economic value. Such being the case, it appears to us that prospecting should be stimulated whenever, and wherever, possible.

After pointing out the deficiencies in the existing mining regulations which operate against profitable exploitation, the commission recommends the abolition of prospecting charges, a reduction on the rental of mining leases, and that the payment of a royalty on iron ore be abolished, or, failing this, a radical change in the present system of calculating royalties. The commission winds up its report by a recommendation to the government to employ the services of a geologist of repute to undertake a geological survey of the colony without delay.

OTHER INDUSTRIES.—The report also covers other industries and in its summing up of conditions the commission points out the possible danger to local prosperity by the general tendency towards increased wages on the part of all classes of skilled labor which with the high rents prevailing in the colony, tends to give an undue advantage to Canton. Especially is this so in the matter of small Chinese shipbuilding and repairing yards who have been driven to Canton because of the loss of their foreshore rights. Because of these cheaper conditions, Canton has already captured the motor-boat building trade formerly conducted in Hongkong.

The report points out that there is a large number of industries capable of great development amongst which vegetable oil extraction is cited as one of the most important. Tin smelting is carried on in Hongkong in a very primitive manner, and there is no reason why it should not be made a remunerative industry if conducted on scientific lines.

In the thriving township of Shamsuipo a cotton cloth weaving factory is in operation, the product of the factory finding ready sale in Hongkong and in the Straits Settlements. This industry, with cheap labor, should be capable of further development. Weaving and knitting factories are already established in the colony, and the government should give these every encouragement and assistance to enlarge the scope of their activities. This industry employs a large number of hands, and there is every indication that the number is on the ascending scale. Soap-making has vast possibilities before it if the South China market can be captured for the products of the local factories already in existence and of others in contemplation.

Untold wealth has been made out of silk both in Japan and South China, and there is no reason why Hongkong should not participate in the wonderful prosperity of the silk industry. While Canton raw silk is in some respects superior to the silk of other producing centres, yet at present the same attention is not given to the rearing of the silkworm and the winding of the raw silk as is paid in the sericultural districts of Europe and Japan.

For silk of the first quality for the export market a picul fetches under normal conditions considerably over $1,000, and for the second quality, if sold in Canton, from $600 to $800. Customs tariff, likin and inland taxation, freight rates, conveyance and incidental expenses, including discount on silver subsidiary coinage, account for no less than 20 per cent. of the cost if silk produced in the new territories is shipped to Canton for sale. If a ready market could be found in Hongkong the Hongkong product would not be penalized to the above extent. As far as can be ascertained, however, the local demand is next to nothing, excepting for export to the markets of America and Lyons.

It is to be hoped that sufficient enterprise might be encouraged in Hongkong for the establishment of a factory equipped with modern appliances and machinery for all classes of hosiery, and so foster an industry which from experiments has been proved capable of successful results if undertaken under favorable conditions.

Rice polishing is another of the industries stimulated by the war. There are many ways and means of developing the industry so as to place Hongkong in a position to supply the large demands from California and South America. There is also scope for fruit-canning and meat-packing. Of comparatively recent date is the establishment of cigar and cigarette factories. These promise to rank among the leading industries of Hongkong.

The committee express the view that government assistance might be invoked for the starting of a cotton mill in Hongkong. It will be remembered that the Hongkong Cotton Spinning and Weaving Company, with a capital of a million dollars, started under the auspices of a leading British firm in Hongkong, went into liquidation because the mills could not be made to pay. The Hongkong mill was penalized through having to import cotton from the North of China.

If cotton could be grown in the new territories there would be better prospects of success for the fresh attempt to embark new capital in a cotton mill for Hongkong. The Chinese promoters desire government assistance, and there is no doubt that when the new company assumes concrete shape the Hongkong government will regard the enterprise sympathetically. What is desired in the first place is a suitable site, with a water supply not liable to stoppage in periods of drought such as occasionally occur in Hongkong.

**Present Shipbuilding Activity.**—Notwithstanding the depression in all other parts of the Far East, Hongkong shipbuilders are being kept busy, and at the present time there are over 44,759 tons building in three establishments alone.

**Hongkong and Whampoa Dock.**—On the stocks in the yards of the Hongkong and Whampoa Dock Company at Kowloon 26,000 tons are under construction. Four oil-tank steamer for the Anglo-Saxon Petroleum Company and a steamer for Messrs. Jardine. Matheson & Co., are the orders on hand. The oil-tankers will be sister-ships, each with a gross tonnage of 5,600 tons. They are designed on the Isherwood system of longitudinal framing. The first of the four—the *Paludina*—will be ready for launching early in September. She will have reciprocating engines. The others are named, *Petricola*, *Planorbis* and *Pleiodon*. It is expected that they will be let down the ways at intervals of about six weeks after the *Paludina* takes the water.

The steamer for Messrs. Jardine, Matheson & Co.—the *Kung Wo*—is a steel twin-screw vessel planned for a river trade. She has a gross tonnage of 4,400 tons. Launching of the ship will take place early in October if all be well.

**Taikoo Dockyard.**—The tonnage being constructed at the Taikoo Dockyard and Engineering Company's Works is 17,432 tons. The largest vessel on the ways is a steamer of 7,500 tons gross for the Blue Funnel Line. She will be fitted with a geared turbine engine.

Three steamers for the China Navigation Company are on the skids and a fourth is at the fitting-out wharf. The *Kwangtung*, a steel-screw vessel of 2,450 tons gross, has already been launched. Like several others building for the C.N.C. she will be equipped with geared turbines. Following her about the middle of September will be the steamer *Changsha*, a twin-screw ship with reciprocating engines of 2,482 tons gross, which will be utilized in a river service of the company. A third vessel, yet to be named, of 2,500 tons gross register having turbine machinery, is also being built for Messrs. Butterfield and Swire. The steamer nearing completion is the *Kwang Chow* of 2,500 tons gross. She will be the first of the company's coastal steamers built at Hongkong to have geared turbines. It is expected that she will be in commission in less than a month's time.

Two tow-boats for the Blue Funnel Line which are now almost completed are not included in the return, the vessels being under 100 tons registers.

**Bailey's Yard.**—Messrs. W. S. Bailey & Co. have building four large lighters with an aggregate tonnage of 1,327 tons, to say nothing of a number of smaller vessels, launches and lighters. One has been nearly completed and the other three are reaching the stage for taking the water. The first to undergo her trial trip will be the *Paz*, a twin-screw motorship of 167 tons. She has been ordered by a firm at Manila and will be taken there for harbor work when delivered. The other lighters are oil-tank barges for the Standard Oil Company. One is the *Delaware* of 600 tons and the second the *Brooklyn* of 360 tons. A steel-screw lighter of 200 tons ordered by the Java government is the fourth of the vessels.

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# Japan's Fight for Iron

In the article on Hongkong's Industrial Future, the fact is very forcibly emphasized that much depends upon the colony's acquiring a suitable coal supply to supplement the iron deposits which exist in the New Territory, and that this is to be obtained in the Chinese province of Kwangtung, thus explaining the activities of British agents in the early part of the year to acquire certain coal concessions from the Canton government for a period of 99 years. We are told that when this combination of iron ore and coal supply gets to work, there will come a revolution in Far Eastern industries.

Now comes the no less important announcement from Japan to the effect that Mr. Goro Matsukata and Dr. Asobu Naito have worked out and perfected a process whereby the heretofore refractory "magnetic sand" a form of magnitite, may be smelted at a very low cost. Their process, says the *Japan Times*, has been thoroughly tested on a practical scale and has demonstrated itself to the satisfaction of some of the leading metallurgists of the country, including government officials.

As there are in Japan vast deposits of this form of iron oxide, the new process, if it is all that is claimed for it, is of the very highest value to the Japanese nation, economically and politically. Through its use Japan may be made wholly independent of the outside world in respect to iron, the most necessary of all raw materials, and from being an importing nation of pig and steel, may become one of the great exporters. The figure quoted by the discoverers of this process, namely twenty-five yen a ton for iron through their furnaces, will permit Japan to undersell in every iron and steel market in the world.

The discovery, if it turns out to be all that is now claimed for it, will change Japan's economic condition completely. It will remove at once any necessity that now exists for Japan to turn to China as a source of iron and removes whatever temptation there may have been here to acquire the iron works and the iron deposits there.

It is to be hoped for the sake of Japan, that these prophecies will come true, and so relieve her of the great expense, not to speak of international friction, attending upon her further quest for iron and iron ore in other Asiatic countries. The victory in the struggle for commercial supremacy will inevitably go to that people who have abundant reserves of coal and iron. Hongkong is striving hard to find these raw materials which, it is hoped, will make her the leading industrial centre of Asia, and as will be seen from the report of the economic commission, is evidently keeping an eye on Japan's imports of iron and the purposes for which they are used.

* * *

# An American Shipping Policy

The United States has passed through a trying ordeal in its endeavor to build up an American mercantile marine, and at this time is faced with the still more arduous task of operating it at a profit. Experts and would-be experts have declared that it cannot be done under government supervision and have advocated the sale of the fine new ships to private companies, but when bids of only $20 per deadweight ton were offered from the highest bidders in open competition for some of the choicest vessels, the catastrophe that would have followed the dumping of 10,000,000 tons of shipping on the market can readily be imagined. The decision of the shipping board to limit the sale price of ships to around $200 per ton, when experts were clamoring to have them put on the block at $100 has undoubtedly preserved our mercantile marine from a blow that would have been felt for many years to come.

Slowly, very slowly, in the face of opposition from private and other interests, organization and system is superseding chaos in the management of the shipping board, and the idea is becoming firmly fixed in the minds of all Americans that whatever may be their views on the subject, the American mercantile marine is an accomplished fact, and they must maintain and support their own fleet. They realize, now that they are up against the keen, cut-throat competition of other nations, that they have reached that point in their industrial development where they must export at least 25 per cent. of their manufactured products or go under in the struggle for existence. Ships are necessary to deliver this surplus to the markets of the world. They must be patronized and maintained.

The Jones Bill has yet to be given a fair trial. On its face it is full of inconsistencies which will give rise to much friction, irritation and reprisals. Whether it can be successfully placed in operation is a question that can be answered only by carrying out its provisions, and then, if it fails after a fair trial, other legislation can be devised to meet the difficulties. The section of the Jones Bill which provides for preferential rail rates on goods carried in American bottoms, must certainly bring reprisals from other nations. Reports from Japan state that chambers of commerce in that country are backing a movement for preferential rates on the railways of Japan for Japanese goods shipped in Japanese bottoms. In addition, there is a move to send 10,000-ton cargo steamers direct from Japan to the Atlantic ports through the Panama canal as a first step to offset the provisions of the Jones Bill. The *Syren and Shipping*, the leading British marine publication, says that "while nothing is said about retaliation, obviously retaliation is the reason." In time, no doubt, the paper adds, "Senator Jones and his adherants will realize what they are doing, which is nothing else than pushing the American mercantile marine to destruction. The frog burst from a surplus of pride."

It is to be expected that the Jones Bill will meet with such criticisms and the opposition of all foreign shipping interests, which only the most determined and patriotic co-operation and co-ordination on the part of Americans can overcome. We may not like our fleet now that we have got it, but we have either to hold it or confess ourselves defeated in the greatest commercial struggle that the world has seen. Much will depend upon the new shipping board who have taken over the direction of our new mercantile marine. They are not all practical shipping men, in fact, some of them have only political recommendations for the position, but such as they are, they were picked by the president as the best men available, trained executives all, who will do their utmost to make a success out of a heart-breaking proposition. It requires some courage to take hold of and straighten out the tangle that has resulted from previous administrations.

At the head of this board stands a man conspicuous for his lack of technical marine knowledge, but, on the other hand, an administrator, a business man from the soles of his feet to the top of his crown.

THE NEW SHIPPING BOARD

*Left to Right*—Meyer Lissner, Los Angeles, Cal., Republican, Representing the Pacific Coast States; Rear-Admiral W. S. Benson, U.S.N., Atlanta, Ga., Democrat, Representing the Atlantic Coast States; T. V. O'Connor, Buffalo, N. Y., Republican, Representing the Great Lakes States; Albert D. Lasker, Chairman, Chicago, Ill., Republican, Representing the Interior; Hon. George F. Chamberlain, Portland, Ore., Democrat, Representing the Pacific Coast States; Frederick I. Thompson, Mobile, Ala., Democrat, Representing the Gulf States, and Edwin C. Flummer, Bath, Me., Republican, Representing the Atlantic Coast States.

Mr. Albert D. Lasker, the new chairman of the shipping board, is known best to the business world and to journalists as an advertising expert, who worked his way up from the office boy to be the sole proprietor of the world-famous advertising firm of Lord & Thomas of Chicago, the man who made "Spearmint" a household word in five continents, and who has brought millions in returns to other manufacturers who went to him for expert advertising advice. Mr. Lasker is known as a worker, one, who, if necessary, does his 16 hours a day without grumbling. He will put into the shipping board that element of "pep" required to develop the American mercantile marine along lines that will find a lasting place in the affection of the American people.

**Albert D. Lasker**

New Chairman of the United States Shipping Board

The effects of his campaign is already being felt. The board has overturned the policy of Admiral Benson who refused to advertise its marine services, and throughout the world we now see the blazing advertising of the shipping board calling upon Americans to patronize their national undertaking. Americans should travel on American ships as a patriotic duty and be willing to suffer some inconvenience in time and accommodations to do this. On the Atlantic, on the Pacific, and on all the Seven Seas. American ships are now operating calling upon Americans to stop their knocking and get together and boost the new services and so assist the board to make good in serving the country and so advance the interests of every American residing in or doing business in foreign fields.

## Y. Matsuoka

IN the shake-up of the South Manchuria Railway administration following charges of political favoritism and jobbery, one of the ablest and best known of the younger officials of the diplomatic service has been appointed to the new directorate. The appointment of Mr. Y. Matsuoka to this position comes as a recognition of valuable services rendered to his government in other directions. For many years he has been attached to the diplomatic service where he distinguished himself on many occasions when called upon to investigate and report on delicate international questions. At the Paris peace conference he had charge of the publicity and intelligence work of the Japanese delegation and became well known to the journalists of all countries for his willingness at all times to give accurate information and elucidate the position of his nation. Few indeed, are the Japanese who have such a ready command of English and ability to express themselves in that language. In this respect, Mr. Matsuoka is one of the most gifted, having passed several years of his early life preparing for the bar in a Michigan law office. His handling of the Japan's publicity at the peace conference earned the commendation of all newspapermen irrespective of nationality or politics. Returning from Paris, he was placed in charge of the press bureau of the foreign office, where, after a year of hard work, he was compelled to seek a rest. His promotion to the responsible position of director of the

**Y. Matsuoka**

A New Director of the South Manchuria Railway. One of the ablest of the Japan's younger diplomats

South Manchuria Railway where he will have a still further opportunity for the exercise of his sound common sense and executive ability, must redound not only to the advantage of the railway but of Japanese interests in China as a whole.

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## Germans Back on the Job in China

If the Germans are to pay the huge war indemnity they must work, produce, manufacture and dispose of their products in allied and neutral countries. To protect their own manufacturers the allied countries are raising their tariffs, inventing new ones and employing other artifices to make the payment as difficult as possible. The dominant political party in the United States is now advocating the assessment of *ad valorum* duties on imported goods on the basis of the American wholesaler's selling price on comparable competitive articles of domestic manufacture. This will apply to at least 75 per cent. of America's imports. Every order booked by the Germans in neutral markets, while assisting to cancel the war debt, deprives the allied manufacturer of that much profit. The great illusion surrounding the enormous demand upon Germany at the height of the peace conference is fast being dispelled in the light of trade developments. Already we hear of proposals that the reparations commission shall exercise its power of specifying the kind of goods in which Germany shall pay by demanding raw material instead of manufactured goods, and which is met by a prompt protest in the German press, who, notwithstanding the immense reduction in the total of the debt involved in the proposition, see in the move a plan for hamstringing German industry. The controversy centering around this proposition is intensely interesting for if it goes on we shall see the Germans insisting on paying and the allies by every possible means seeking to avoid being paid. The ultimate outcome of this struggle must be that the allies will grow sick of their bargain, and will take no forcible measures to enforce it.

Nowhere in the world has the German comeback been so rapid as in China, and on all sides we hear of their successful competition in large engineering contracts, in which they invariably are 40 to 50 per cent. lower than American prices. We are informed that in the competition for a cotton mill where the American tender was 800,000 taels, the German price was 400,000 taels on the same specifications. It is reported that eleven complete electric light plants have been booked by the Germans in China in the past six months, in competition with Americans and British manufacturers, in fact the cream of this business has gone to them, and, according to the *North-China Daily News*, they have been equally successful in obtaining orders for cement plants.

The German position in China has been materially strengthened as a result of the treaty which puts them on an equal footing with other nationals and guarantees most-favored-nation treatment and customs reciprocity between the two countries. German trademarks are restored to the original proprietors and German subjects are to pay no taxes not paid by natives of China. Germany engages to fill her obligations to China under the treaty of Versailles, but in addition promises to pay a lump sum as indemnity and in reimbursement of the internment expenses of Germans in China during the war.

The provision in the treaty placing German subjects under the jurisdiction of Chinese courts is a long step forward.

This, however, is not the only important provision of the treaty. It releases all German property to original owners, and it has enabled the reopening of the Deutsch-Asiatische Bank's branches in China at the very time when French prestige in China suffers a severe blow through the failure of the Banque Industrielle de Chine.

That part of the private arrangement between China and Germany concerning the liquidation of former German property in China met with the prompt action by the allied reparation commission. Under Article 260 of the treaty of Versailles the reparation commission is empowered, within a year after the treaty comes into force, to call upon Germany to buy up all rights and interests possessed by its subjects in all public service enterprises, and in all concessions in Russia, China, Austria, Bulgaria and Turkey or their dependencies, and transfer them to the reparation commission, together with any interests the German state may itself possess in such countries, it being left to Germany to indemnify her subjects for any loss that they may suffer from such transfer.

The *Morning Post* reports that the reparation commission called on Germany to comply with this part of the Versailles treaty, whereupon it was found that the Berlin government had found yet another way of escaping the fulfilment of its obligations by taking advantage of the argument that, so far as Article 260 applies to China, the whole situation has been modified by reason of the fact that China refused to sign the treaty. Under the separate treaty of peace signed between China and Germany on May 21 an arrangement has been come to under which the German government has undertaken to pay to China fifty per cent. of the value of German property situated in China and so far not liquidated. In consideration of this payment the property that has not yet been disposed of is to be handed back to its original owners. The amount involved is enormous, as it is estimated that barely one-eleventh of the German property in China has so far been disposed of by the Chinese government, and this one-eleventh represents a value of 1,200,000 taels. Under the arrangement come to between Germany and China the payment to be made by the German government will take the form of four million silver dollars spot cash, while the balance will be paid in the form of bonds issued by Chinese railways.

The reparation commission insists that this private arrangement between the Chinese government and Germany cannot in any way invalidate the right of the allies under the treaty of Versailles, and a commission of bankers is now deliberating as to the method by which German property in China may be transferred to the allies.

Commenting on the documents that have just been published by the German government in regard to its settlement with China the *Temps* characterises the disclosures made therein as veritable revelations. The Chinese government, it appears, first requested Germany to recognize the Versailles treaty in its entirety in order to retain the rights it would have acquired had it signed when the rest of the allies did. In his reply to this demand the German plenipotentiary wrote insisting that the "German government could not now repeal a general recognition of the Versailles treaty, for such a step would be prejudicial to the ulterior revision of the treaty."

These disclosures help to accentuate once more the close understanding which has always existed between China and Germany, and the difficulty confronting other nationals in dislodging her from this position. The facts revealed by the reports from Paris show the Chinese government on the one hand requesting Germany to recognize the treaty in its entirety in order to retain rights it would have acquired had it signed at the same time as the other powers. On the other hand we find the Chinese government refusing to negotiate with Japan over the final disposition of Shantung because it was not a signatory of the treaty which recognized Japan's position.

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## Advertising Statecraft

Success in business goes hand in hand with judicious advertising. Diplomacy is the biggest kind of big business. What the display advertisement is to commerce, the information article released by governments is to politics. At no previous period of the world's history has publicity been more general or its influence more potential than at the present time. Propagandists, press agents and publicity bureaus are active as never before in the struggle for the spotlight and diplomats vie with each other for space on the first page of the newspaper. Under the old order of world politics battleships, batallions and bayonets stood behind the diplomat, but his success to-day depends upon public approval, which may only be gained through publicity, in some form or other. When diplomacy fails, and the people are again asked to pay the supreme sacrifice they will demand that all the facts on both sides of the case be placed before them. Never again will the civilized world be railroaded into a war to conceal the stupidity, idealism or venality of so-called diplomats and statesmen or to gratify the gross partiality of newspaper writers. War is the most expensive business in the world and should be prevented at all hazards. Propaganda that will bring about a peaceful and honorable solution to differences between nations, is a most praiseworthy and humanitarian undertaking, a part of the new diplomacy which holds that it is better to pay for publicity to prevent war, than to await the declaration of hostilities and then squander millions in the dissemination of bigoted and biassed information in order to discredit the other side.

Statesmen of the past were circumscribed in their influence because publicity had not, in their day, widened the circle of their audience to its present proportions. The speeches of Premier Lloyd George, President Harding, Premier Hara and others now appear side by side in the morning paper, each seeking to sway public sentiment through a subtle system of psychology which reached such a high state of development during the late war. It was, however, overworked by the Germans, and lacking finesse, defeated its own purpose. Since the war there has been an increase of propaganda to accomplish certain ends. The chief danger lies in overdoing it. Publicity defeats its own purpose when it does violence to the truth. The basis of all good and effective advertising is the truth. The printed statement which conceals or distorts the facts, carries with it its own condemnation, whether employed to serve the purposes of trade or diplomacy.

Up to the outbreak of the great war, the "Biggest Business in the World" managed from Washington, steadily frowned on any publicity to elucidate its foreign policies. In order to properly excuse his own pacifist tendencies, President Wilson went on record that America's delay in entering the war arose from the necessity of educating the American people to the importance of the issues involved, thus implying that much propaganda was essential to arouse the nation to a sense of its obligations, and that the credit for this campaign of education belonged to himself and the democratic administration. The full measure of President Wilson's belief in propaganda did not, however, manifest itself until after the nation had entered the war, and then, freed from congressional restraint, he entered upon a publicity campaign that will go down in history as the most extensive, audacious and expensive propagation of an ideal ever conceived and carried out. Twelve million dollars were wasted in a vain attempt to prepare the world for a Wilsonian peace. The thought naturally arises, that if these millions had been expended before the war in an honest effort to educate the people of the world to the fundamental issues at stake, the great catastrophe might have been averted. If one-tenth that amount were now expended in proper publicity concerning aims and aspirations in the Pacific and Asia, much future trouble might be avoided.

The example of Wilson has been followed by our Philippine wards, and only recently they voted and appropriated a million pesos of the public money to conduct a propaganda in the United States looking towards their immediate independence. The answer of the Harding administration has been prompt and the Wood-Forbes mission will inform the nation whether or not the million peso propaganda campaign is founded on fact. All preliminary reports from the islands, indicate that the facts as ascertained on the ground fail to uphold the arguments spread broadcast by the propaganda agents. We have here a case, where failure to adhere to truth will undoubtedly carry with it its own condemnation, and Philippine independence set back another generation.

These truths are borne home to us at the present time because of the reported activity on all sides in China to prepare for the Pacific conference. It follows the dismal failure of the mission of Mr. Lenox Simpson and the activities of Mr. Thomas Millard to work up a war scare over the renewal of the Anglo-Japanese alliance. They failed because they did not adhere to the truth. The facts of the situation in China are before all the world, and no amount of glossing over on the part of skilled publicists or gifted diplomats can alter by one iota the truth that is apparent to every foreigner in the country. China is entitled to and should conduct a vigorous publicity campaign to place her position fairly before the world. She has many friends, predisposed in her favor, but whose hands are tied, because of the utterly irresponsible activities of publicists, who conceal their real position behind some advisership to some bureau or other in Peking, and whose main efforts are directed in moulding a public opinion favorable to the clique which pays them a salary. The higher interests of China become secondary to the interests of the politicians or militarists who pay the bills.

It was not long ago that the Japanese government announced its decision to engage the services of a foreign adviser to its publicity bureau, in the person of Mr. Frederick Moore, at one time Peking correspondent of the Associated Press. In commenting on this departure in publicity methods, the *Japan Times* says

"In engaging an adviser for the publicity bureau, Japan is doing what China has so successfully done, but in a different way, and a decidedly better way. In Peking it is the custom to retain foreign correspondents under salary, attaching them to various bureaux and departments as advisers. Their work is not so much to advise their particular bureau chiefs as it is to see that the papers they correspond for get the 'right' sort of 'news.' They are not known as salaried press agents for China, but that is what some of them are. Mr. Moore's position is of quite a different nature and he will only draw the one salary."

This embraces a truth that should be taken to heart by the Chinese. Here, a small coterie of writers closely associated as advisers with high government officials or factional chiefs, have been working along lines that could only tend to widen the breach between Japan and the United States. It would be a good thing if China would come out into the open, and, like Japan, announce her decision to employ a regular foreign publicity expert to direct and accept responsibility for her political propaganda. There is no good reason why China should not have a good strong publicity organization to present her side of international disputes before the world. There can be no just criticism against properly conducted official publicity. The opposition to China arises largely from the fact, that she employs these so-called experts under the guise of advisers of sorts, and, when they misstate facts and are found out, the Chinese government immediately repudiates them, declaring that the adviser-journalist in question is acting entirely as a private individual whose views are not held by the government.

The world, and especially other journalists in China, will view with greater sympathy, a Chinese publicity system that works in the open, with some responsible official head who will have the respect of his colleagues. The policy pursued by China in the past, and especially during the last two years, can only defeat its own ends. Deviation from the facts, playing with the truth and inciting international discord, will eventually bring its own reward. The Philippines are a case in point. The same keen, clear visioned observers, who have reported on the Philippine situation will carry home their report on conditions in China. No amount of propaganda can hide the deplorable state of internal affairs in this country, nor can it get under the skin of these unsentimental Americans upon whose findings will be based to a large extent the future policy of the American government.

We have before us a pamphlet entitled "Sino-Japanese Relations" marked "Confidential," circulated by an important international association in China, which is on its face, propaganda calculated to incite international discord and discredit Japan. It bears the press mark of an important publishing house in Tientsin, from whence other similar "confidential" propaganda has emanated and been circulated throughout China in the endeavor to destroy the usefulness of a publication which holds opposite views. These pamphlets, holding Japan up to scorn and ridicule, are still being circulated with the word "Confidential" deleted. All the members of the Wood-Forbes mission were carefully furnished with copies, anonymously, of course, through the mail. This is the sort of propaganda and publicity that is injuring the cause of China, and the Peking authorities will be well advised to seek some other method of publicity and repudiate publicists who can find no other way to operate except through such undignified methods. Come out into the open.

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## The Passing of a Mitsui

MR. Yonosuke Mitsui, president of the Mitsui Bussan Kaisha, Japan's greatest trading concern, passed away in Tokyo on August 9th last. The head of this world-wide organization, he was probably the most powerful factor in the whole commercial world, as few indeed are the foreign companies whose turn-over equals that of the premier Japanese concern whose affairs he directed. Like most of the members of this princely house he rarely came under the limelight, the world knowing only the managers and chiefs of departments who directs the activities of the organization. It is difficult to single out any one member of the Mitsui family for special credit in the building up of their immense business, as several are now directing the various ramifications of their immense interests.

The Mitsui family have surrounded themselves with the best executives and business talent that can be found in Japan.

To Mr. Yonosuke Mitsui, however, belongs credit for being one of the founders and active directors of the Mitsui Bussan Kaisha, which has grown since its inception in 1876 to its present position as the largest trading concern in the world, through whose hands passes more than one-fifth of the total import and export trade of Japan, a business that runs into the colossal sum of one billion good dollars annually.

The chief object of the Mitsui Bussan Kaisha, when it was launched, was to engage in the direct import and export trade of Japan with foreign countries, which at that time was entirely in the hands of foreign merchants at treaty ports. The company's initial capital was Gold $500,000 but as its business expanded by leaps and bounds the original capital soon became inadequate to cope with the situation and it was therefore raised to Gold $10,000,000 in 1909 and subsequently, in February, 1918 to Gold $50,000,000—fully paid up.

The principal article of the company's export trade are raw silk, silk textiles, coal, cotton and cotton products, timber, beans, cereals, flour, sugar, copper and other metals, oils, camphor, matches, canned goods, tea, sulphur and miscellaneous goods.

The company is perhaps the largest handler of raw silk in the world, supplying a fourth of Japanese silk exported to America, all besides supplying European markets. It also controls 40 per cent. of Japan's entire output of coal. The credit of having been the first exporter of Manchurian beans to Europe and of lumber to America and Europe must also be awarded to the company. The company's principal imports are raw cotton, sugar, machinery of all kinds, ships, steel bridges, locomotives and railway equipment, steel, iron, rice, wool, dyes, drugs, timber and a long list of raw materials.

Though the Mitsui Bussan Kaisha owns a fleet of 29 large steamers aggregating over 120,600 tons for its exclusive use these are nevertheless wholly inadequate for the company's requirements and it is one of the greatest charterers of tonnage in London and the East.

It has its own dockyard for building and repairing steamers.

The late Mr. Yonosuke Mitsui has also acted as the chairman of the board of the Sakei Celluloid Company, auditor of the Toshin Warehouse Company, and was one of the founders of the great Kanegafuchi Spinning Company whose affairs he directed as president and director for several years. He leaves a record of work accomplished that has hardly been surpassed by many better known "Captains of Industry" in other countries whose success has been attained more through successful stock manipulations than through actual creative ability. The Mitsui enterprises stand to-day as one of the bulwarks of Japan's prosperity. With its financial colleague, the Yokohama Specie Bank, created to finance Japan's foreign trade, the Mitsui Bussan Kaisha, the pioneer trading firm, stand for all that is best in Japan. They have led the way and blazed the trail that others are now following. The story of Mitsui is an epic in the commercial history of the world. Its founder and president who passes away, leaves a monument that must evoke the praise and admiration of all competitors, and serve as a guide and model for generations to come in his own country.

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## Hongkong Needs Boosting

UNLESS possessed of an inquisitive mind and a bent for exploration the average visitor to Hongkong will depart without having really seen one of the beauty spots of the Far East, There is no one to tell him of the advances made by the colony, no literature, no free pamphlets setting forth its advantages as a health or rest resort, no advertising, and few people that will volunteer information. All the requirements for making the island one of the most popular resorts in Asia are there, but Hongkongites do not seem to be specially desirous of letting the rest of the world know anything about them, quite content to struggle along on the past reputation of the port as a commercial centre.

The terminal station of the Kowloon-Canton Railway stands as a landmark in Hongkong harbor, a beautiful building which is not appreciated until the explorer passes through the gates to the train platform and marks with surprise and delight the garden-like arrangement of the grounds with its grass and flower beds, something different, to the dirt dust and bustle of other terminals. It seems a pity that this line is not more generally patronized by the traveling public, as it passes through a district of exceptional scenic beauty.

An automobile trip around the island of Hongkong is one to be remembered. Next to the world-famed Columbia River Drive, there is nothing that can compare with it for scenic beauty and thrills. The beautiful Repulse Bay Hotel and beach has no equal in the whole Orient. It stands by itself, a pearl hidden in an oyster awaiting discovery. It is the same with a trip over the beautiful roads of the New Territory. Some day the government of Hongkong will awaken out of its sleep of conservatism, and fall in line with other enterprising localities and advertise its many advantages, not only industrial, but those that make for profitable tourist traffic. If it were not for the Hongkong hotel management, the traveler would never hear of the motor trip around the island made possible by the excellent work of the public works department in constructing the highway.

It is the same to a large extent with the railway, which passes through a territory whose beauties are left to the traveler to discover after he has mustered up courage enough to brave the trip against all the warnings of friends who urge him to go to Canton by the boat, "so much more comfortable you know."

It is perhaps unfair to criticize British methods in Hongkong, as there is little to call forth such criticism, except in so far as it relates to a hidebound conservatism which seems to take special delight in concealing the good things they have under a bushel basket. Hongkong certainly needs boosting.

# "Trade Follows the Loan"

THE campaign to carry American firms into China on the top wave of the war-export boom is having its after-effects in more ways than the one pointed out by the Shanghai commissioner of customs and emphasized by a more recent warning in the *Commerce Reports*. Disappointed Americans who flocked to China in answer to the call, have laid their failure to British competitors, who, they declare, have almost a monopoly on China's engineering business. As a result, we learn that the president of the Engineers' Club of Washington is organizing a party of no less than 500 American engineers who will visit China to study on the ground the reasons for British trade success in engineering products.

Apparently American engineers are not satisfied with the mass of propaganda literature that has poured into their offices, and are coming over to see for themselves why they have failed to get all that business they have been assured was here awaiting them. All this is the outcome of "Dangerous Propaganda," which, if persisted in, will result in Americans putting more money into China than they will ever take out. The amount of money sunk here in the past two years, will weigh heavy in the balance against the profits that will accrue to American firms for many years to come.

During the past year Americans have freely contributed $7,500,000 for Chinese famine relief ; add to this another $5,000,000 for the regular expenditures on missions, colleges, hospitals and charities, then the sums lost by firms who swarmed in here in response to the call of the booster, the past and present expenses of the American group, without counting the losses incurred by banks and commercial firms in the recent crash, we will have a total of somewhere near $15,000,000. With the recent losses of the Philippine National Bank and other prominent American concerns, this may be easily increased another $10,000,000, or a grand total of $25,000,000 of American money from all sources, that has found a safe deposit in China this past year. This represents ten per cent. on $250,000,000. If we attempt to convert this into terms that the engineer will understand, it means that Americans would have to lend to China the enormous sum of $500,000,000 for railway construction in order to obtain orders for materials that will bring $25,000,000 in profits to our manufacturers.

If we should add to this the losses of previous years, of moneys sunk in chasing the will-o'-the-wisp of Chinese concessions, prospecting, investigating and exploring, the expenses of those who have devoted their time and energy to financing impossible Chinese political wild-cat schemes, the losses incurred in the Canton-Hankow Railway, the Standard Oil plunge into the Shensi oil fields, the Siems-Carey *fiasco*, the expenses of the Fitch mineral survey, the Carnegie Researches, the present Andrews expedition into Mongolia, and down the line through other less spectacular missions, and it would not be far from the truth to state that another $15,000,000 has disappeared in unproductive Chinese work.

In other words, it may be fairly stated that during the past fifteen years, Americans have sunk at least $40,000,000 in China (without counting the annual charge for the upkeep of missions, colleges, hospitals, etc.), a sum which represents an investment on the part of Americans of $800,000,000 in Chinese Government Railway bonds, in order that American manufacturers might profit to that extent from the sale of equipment. And now to cap this record, it is seriously proposed to send 500 American engineers to China to make an investigation that will entail an expenditure of at least $4,000 per head, $2,000,000 poured into seive of Chinese delusions, the profits on $20,000,000 in orders for engineering materials, an equivalent to a $40,000,000 Chinese railway loan. Where will the madness end ?

*It is perhaps too late to counteract the effect of this propaganda*, but we will venture once more to give our American engineering readers and advertisers a short treatise on successful business methods in China. Our experience covers a period of eighteen years, and is not only the opinion of a trained observer, but that of a practical engineer and contractor. As one engineer to another, we will indulge in "straight talk." There has been too much flubdub handed out to American manufacturers these past four years, and it is time that some cold, hard, business facts were placed before them. Naturally, our ideas will not coincide with those of the boosters, publicity agencies and such firms as depend upon the representation fees of manufacturers in order to exist. There is one fundamental truth that will explain the situation to the common-sense American engineer ; that is :

If this truth be grasped, American engineers can save their money and forego their contemplated visit, 500 strong, in order to ascertain why the British are successful. For many, many years the British have been putting money into China. So have the Belgians, the Germans, the Japanese and other far-sighted European nations compelled to seek profitable foreign fields for the *investment of their surplus capital.* They made a close study of China. Whenever the opportunity presented to take up a railway or industrial loan they did not hesitate because of a lack of knowledge of the country. They accepted the axiom that a railway between any two points in China must pay, if properly managed. They took what was offered and then trusted to an agreement that would secure to them extensions, additions, etc. They lost no time in entering into a preliminary agreement, knowing that with such a document in their possession, their government would protect their rights and the final agreement would be signed to their satisfaction. In this manner the British have financed railways, mines and industries. So have others. They did not insist at the outset on sending a special commission out to China to study and investigate on a proposition before signing a preliminary agreement. They made certain of their position, filed their agreement with their foreign offices and waited until such time as the Chinese were willing to discuss details. That is the sceret of British success in China.

Americans have not invested in China. They have talked about it for many years. They stand exactly where they stood in 1898 at the commencement of the "Battle for Concessions." They refused to take to heart the lesson that others had profited by, and invariably insisted upon making a most careful and searching inquiry into any Chinese proposition, before accepting a preliminary agreement for building a railway or developing a mine. *They lost some of the richest concessions because of this.*

From the time that Americans tried to pry the Japanese out of Manchuria, down to the Siems-Carey and Federal Wireless contracts, it has been one long succession of deals in which they have insisted upon forcing open some old door or other that led into the preserves of the other fellow. There have been all kinds of wonderful opportunities in China for American capital, but legitimate openings have been ignored in order to seek concessions that raised the issue of the "open door" with some other nation. The culmination of these tactics came when impractical advisers led Mr. Carey to accept a railway contract during the war which raised the issue of the "open door" with all the allies when they were fighting for their existence in Europe. The consequence? The allies came together in defense of their interests, and Americans found, after two years of trying to beat the combination, that there was no place left in China where they could construct a railway without infringing rights previously granted by China to other powers. The inevitable outcome is the consortium, the only way in which American capital can now co-operate in the development of China's railways. Instead of seeking legitimate openings, Americans invariably have taken over contracts and concessions loaded with dynamite, if not intentionally, then Chinese officials shrewdly saw to it that we picked a good, juicy lemon in order to compel the American government to support its traditional doctrine. If Americans had been more concerned about *actual business than in trying to pry open these closed doors,* by this time China would have been criss-crossed with railways built from the proceeds of American loans and furnishing a profitable market for American engineering products. This is the TRUTH devoid of all trimmings. The American manufacturer will never learn it from others, as nearly everyone responsible for their failure are still prominently before the public posing as authorities on how to do business in China. They will shirk the truth, and justify their own inexperience by laying the blame to spheres of interest, discrimination, and a set purpose on the part of other nations to keep Americans out. American failure is simply the result of one long campaign of sentiment. The proof of it all lies in the fact that after twenty years of pulling ourselves up by the boot-straps, we have not one single Chinese government loan contract or concession that can be pointed to as a success. Outside the quarter interest of the American group in the Hukwang Railway Loan, our assets simmer down to as fine a collection of trouble-making contracts as were ever devised to set one nation against the other.

There is no need for an investigation on the part of American engineers as to why the British succeed in China. In the above facts rest the answer. If an investigation is to be made, in order to save time and money, let us suggest that it be made in Washington and New York. American engineers may then learn who has been responsible for *fiasco* after *fiasco* which deprived them of a legitimate market in China.

British loans carried with them an obligation on the part of the borrower to purchase British materials. Likewise, other nations operated on the same principle. Belgium's foreign investments have assured to her the trade that is now pulling her through the period of reconstruction. Even Germany is benefitting through her pre-war investments and connections. British capital in railways, mines, mills and ships opened a market for their machinery, for repairs, renewals and extensions.

There is a tendency to attribute the *post bellum* success of British engineering firms in China to superiority of their equipment, a tendency seen in a recent editorial in the *North-China Daily News*, where it discusses "long-service plants" *versus* "lightly-built-short service-plants." This, of course, opens up an old discussion on the relative merits of British and American machinery, which, as a matter of fact, has little or no bearing on the question. The products of both countries will find purchasers. Britain excels in many lines of machinery, America in others. Germany specializes in certain lines while the Japanese are coming rapidly to the front along others. With the British, however, the situation is this. During the six years of the war British machinery plants were converted into munitions factories operated night and day with the labor of the women and children in order that the men at the front could win the war. They had nothing to sell. Americans, Japanese, Swedes and others came into China and took all the business offered. Now that conditions are normalized and the British manufacturer is able to fill orders, he is reaping what was sown for him in the past, collecting accrued interest on national investments. This is the secret of British success at this time.

Americans can flood China with new firms, their travelling agents may swarm all over the country in the search for new business, but until such time as the people at home are ready to put real money into China, the bulk of the engineering orders will go to those who have made the heaviest investments in the country. When Americans have a few hundred millions invested in railways, mines and other enterprises in China, they will get a much larger share of the engineering business, provided, that the investment carries with it the obligation to purchase American materials. If this fundamental axiom is forgotten, the other fellow will reap the benefit of American altruism.

We do not wish it to be understood that Americans are not succeeding in China. We simply desire to invite attention to a fundamental defect that militates against any great increase in engineering business. Americans are succeeding in China, especially where, during the war, they financed new undertakings or gave long credits. These initial plants call for repeat orders, repairs and accessories. Americans are also obtaining a fair share of the engineering business in competition with others on the merits of their products and because of service. But the strain of this competition especially at this time, with Germany and Belgium again in the field, is great. Not every firm can stand it. Americans are working under handicaps, but the greatest and most difficult to overcome is the fact that they have no financial stake in the country. Americans have the friendship of the Chinese, they look to us for moral leadership. We encouraged them to believe during the past few years, that under given circumstances we would fight their battles for them. But this does not bring engineering business to American manufacturers. Sentiment cannot overcome the meaning of the cold type in loan agreements or the obligations hidden behind foreign banking credits or advances.

During the war when European nations who advanced the loans for the construction of Chinese railways could not supply their requirements, American manufacturers were called upon to make good the deficiency. Now that conditions are normal, the loan provisions which provide preferential treatment for the products of the nations supplying the loans, will automatically close this door to the American manufacturer. The result of the tenders opened recently at Peking for railway rolling stock is an indication of what Americans have to face in the strenuous *post bellum* struggle for trade.

There is a tendency just now for Americans to quibble over the meaning of these European loan terms, and to insist that they should be given equal opportunity in the supply of materials. A very worthy and laudable work in behalf of the American manufacturers, one which, ten years ago, The Far Eastern Review also labored for. But, after all, it is unsportsmanlike. It is the other fellow's money loaned for the express purpose of benefitting national industries by opening a market for their materials. They need that market now, and by all rules of the game, Americans should not poach on their preserves. It is up to Americans to go and do likewise, by investing real money in productive enterprises. If we insist on contributing millions to China for purely educational and missionary work, and waste our efforts in blocking those, who, compelled to seek and create markets, were more far-sighted, and then attempt to jimmy our way into a share of their legitimate profits, we may as well forget all the talk about co-operation and undying friendship with our late allies. It won't work.

While Americans have been discussing these matters, the British have been steadily pursuing their objective, and financed many high-grade propositions in the past two years that expands the market for their engineering products. To take a case in point, there is the British loan to the Peking-Mukden line, and the other day we were informed that an additional $850,000 were loaned by the British to purchase supplies for another railway. The Kailan Mining Administration is building a steel furnace in North China, the Kwantung Collieries, Ltd., have an option on most of the coal mines in Kwangtung in order to assure the coal supply that will make possible a steel industry in Kowloon. The British obtained the first option on furnishing the Chinese with aircraft and notwithstanding protests that the contract infringed the "open door" doctrine, an American firm was afterwards given the option to furnish the Chinese navy with aircraft along lines similar to the British contract, that is, by lending the Chinese the money to buy the planes with. The wireless contract is another instance. Three other powers have protested, but the American government stands firm in its intention to support it. It is now a matter of finance. The Siems-Carey contracts for the Grand Canal and several railways are hung-up because of lack of finance. All along the line we find that the British have quietly found the funds necessary for carrying out propositions that will open a market for their products, and all along the line we find that Americans have failed to find the finance that will open the door to profitable engineering business.

Only by including Manchuria in the Chinese field can Americans say that they have dominated the engineering business. The figures show that the Japanese South Manchuria Railway Company have purchased American engineering products to the extent of $75,000,000 in the past twelve years, or equivalent to the aggregate business that has gone to Europe as a result of loaning the funds for railway construction to China. This business has come to us as a matter of good-will and despite the agitation against Japan. European nations had to invest $150,000,000 in China to obtain the same amount of engineering business that was handed to us on a silver platter by the Japanese. The Manchurian market stands by itself. The Japanese are expending at least $20,000,000 this year in American products for the South Manchuria Railway and propose to spend another $100,000,000 or so in the next few years on American machinery for the expansion of their coal and iron mines and steel works. Their program calls for the expenditure of $200,000,000 in the next few years for Manchurian development. The bulk of the engineering orders will go to American manufacturers. To obtain this amount of business in China, Americans would have to lend the Chinese government the sum of $400,000,000 and then have a hard and fast clause in the loan contract that the materials would be purchased in America. As we have objected to the clauses in other loan agreements which closed the door to our products, other nations in turn will insist on the same privilege whenever we lend money to China for railway construction.

If American engineers are anxious for business, and cannot await until the consortium begins to function to get their share of orders for materials for Chinese railways, then our advice is to cultivate the Japanese in Manchuria. Our exclusion laws have forced these enterprising people into Asia, into Manchuria, where they are making a heroic effort to develop its rich natural resources. They have created a wonderful market for American engineering products. Within the next five years they will double and treble the orders that have come to us in the past from this part of the world. Help them develop this market. It has cost us nothing in the past. We can well afford to work in with them in this part of the Far East. If we don't, others will, and the result will be that the most promising and valuable market in Asia for American engineering products will be lost, and our manufacturers will have to await such time as the consortium gets down to work, and then compete with five other nations for our share of the business. These are facts which speak for themselves, sound advice, which, if heeded, will save the expenditure of $2,000,000 in investigating the Chinese engineering field on the part of the 500 American engineers.

Until such time as Americans throw overboard their sentimental pilots, eschew politics and get down to business by putting real money into productive Chinese enterprises, there will be no marked change for the better. The other fellow who was here first and financed the railways and mines and tied up the Chinese through advances and compromised to buy his materials, will continue to get the cream of the engineering business. It is not a question of the superiority of British or any other methods, but the application of a maxim handed down from old Methuselah, a maxim which all other nations except America have learned by heart. It is the rock upon which has been built the great export trade of nations whose limited home markets compel them to control foreign outlets for their products or go under in the struggle for existence. "TRADE FOLLOWS THE LOAN."

G. B. R.

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## Japan's Weakness

In a recent interview, Marquis Okuma placed his finger on the weak spot in presenting Japan's case to the world when he said :

**"The Japanese stand in a seriously disadvantageous position as regards propaganda. The Japanese are not only bad speakers of foreign languages, but peculiarly reserved. They ought to learn to speak more boldly and straightforwardly when dealing with foreign friends. The Japanese should always be ready to insist on the maintenance of their own legitimately-acquired rights and interests, which they are bound to protect at all cost."**

The venerable statesman is right, for despite the current idea concerning the extent of Japanese political propaganda there is little evidence of its efficiency. The Japanese as a people are most reserved and reticent, and their difficulty in expressing themselves in English has been the cause of many misunderstandings. Placed in a most delicate international political position, it has not always been prudent or possible for her diplomats and publicists to speak out plainly on concrete policies and explain their side of the case to the world.

This situation has been aggravated by the absence of a sympathetic foreign press. No other country in the world would tolerate for a minute the continued existence of a bitterly critical and at times openly hostile foreign press from which editors in other countries absorb their impressions of its people, its government, its institutions and policies. Even in the land of free thought, the lid had to be clamped down on the hyphenated press and instances are on record where the plant of such newspapers have gone up in smoke and their editors ridden out of town on a rail, for much less provocation than Japan has had to endure in the past few years. Most of the anti-Japanese arguments can be traced to the editorials and articles appearing in a well-known foreign-owned and edited newspaper, and the fact that it is permitted to continue, should be sufficient proof that Japan is not only tolerant but even ahead of other countries in its treatment of the press.

The picture is presented to the world of a great nation of 70,000,000 people, one of the five world powers, possessing no adequate means of making its voice felt or its policies understood, for the reason that world opinion is formed and influenced by the English-language press. The nation that cannot command free access to this great force, and whose policies are misrepresented, condemned or constantly criticised by the English newspapers published within its borders, is handicapped and out of the race at the start.

It has taken the Japanese a long time to awaken to this fundamental truth, and, as a first step towards recovering lost ground, have acquired control of the *Japan Times*, which will henceforth present Japanese policies and events to the world from the purely Japanese viewpoint. It is a step in the right direction, one that, if followed up, will do more to clear up the misconceptions concerning Japan than any other method of publicity. No Asiatic nation or government can expect to have its policies properly presented, unless it first has the confidence and sympathy of its foreign language newspapers whose first duty should be the defense of interests from which they derive support. The fact that Japan continues to permit such publications to exist, is the most convincing proof of her tolerance and forbearance under great provocation.

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## Consortium Still Alive

In answer to stories circulated in New York that the consortium was "threatened" by conditions existing in Peking and that its headquarters were to be removed from New York to London, Mr. Thomas W. Lamont gave out the following information to the newspapers :—

"The story is bosh, just plain bosh," replied Mr. Lamont, who went to China as the representative of the American banking houses interested in the consortium. "There has been no trouble over the consortium. It never had any headquarters in New York city, and the return to this country of Frederick W. Stevens, the representative in China of the American participants in the consortium, is not due to any such causes as are alleged, but solely to the fact that he has been given a holiday and told to take a rest after his heavy labors in China.

"The meetings of the participants in the consortium have been held in London, in Paris and in New York. It was a matter of simple courtesy to the American participants that the last meeting was held in New York city. It was resolved to hold the next meeting in London for similar reasons. There have been no 'developments' in Peking that have disturbed the progress of the consortium or threatened its existence. The suggestion that there has been friction of such a character as to interfere with the arrangements for the consortium is nonsense. There has been no friction, and Mr. Stevens's trip here has no such origin."

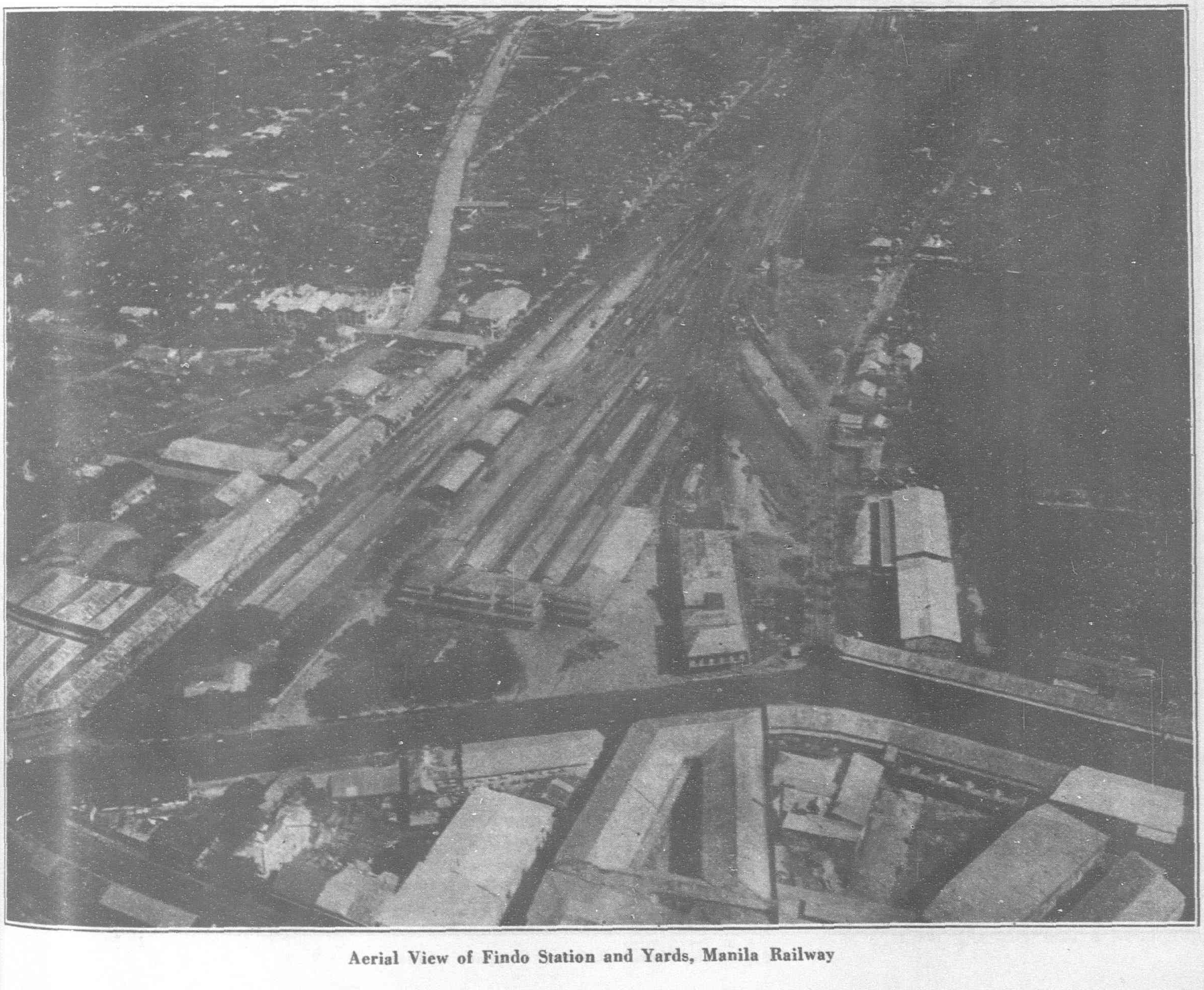
# THE MANILA RAILWAY

## Some Sidelights on its Management

THE traffic review in the report of the general manager of the Manila Railway for the year ending December 31, 1920 complains that passenger rates remained as promulgated in 1915, and increased costs and wages makes an increase in rates inevitable so the directors accordingly recommended an increase of 13 per cent. for third-class fares and 25 per cent. for first-class to take effect January 1st of the current year. Attention is invited to the distressing fact that the first-class passenger service is being maintained for the convenience of ten per cent. of the traveling public and operated at a loss. This report was written in the early part of the year, or at a time when it looked as though native control, as the outcome of the Wilson policies, was to be definitely established One wonders, after reading the concise statement in the report of the Manila Railroad whether the president of the Philippine government operated line was not paving the way for additional votes for the independence party ?

Progress in one direction seems to have a baneful effect in another, for with the building of good roads in the Islands and the inevitable entrance of the motor truck into the transportation field, the railway was hard hit, as was clearly indicated by traffic census figures. As compared with the same month the year previous the railroad suffered a decrease in traffic of 14,000 passengers for six stations on the main line north. For the same period motor truck traffic showed a corresponding increase in passenger travel over an improved parallel highway.

The transportation problem, says the report, should be approached from the standpoint of the welfare of the entire public. There is no doubt that in many localities conditions are such that the motor truck offers advantages over other classes of transportation. A correlation of all transportation agencies therefore appears the only solution in the interest of both the public and the vested public utilities. To quote an eminent authority "each suitable agency of transportation should be employed (and protected by the government) to the extent that it is economically desirable. To be more specific, where a given expenditure, applied to water transportation, will provide for the movement of traffic offered at a lower economic cost, including interest on investment and cost of maintenance, than would be the case if an equal investment were made in any other transportation agency, then in such cases the water transportation should be developed." If the auto truck operating as a common carrier is taxed with a view to reimbursing



Aerial View of Findo Station and Yards, Manila Railway the government for the wear and tear it occasions to the road surface, plus its proportionate share of the interest on investment in the highway, then the problem is automatically solved.

Conditions are further aggravated, says the general manager, by the fact that highway authorities have failed to recognize the necessity for improved roadways between populated centres and railway stations. Many of our principal stations are inaccessible during the rainy season owing to the deplorable condition of their approaches from improved highways and municipal government centres.

The present situation, he declares, is untenable and in the absence of an adequate tax measure the government is confronted with the alternative of subsidizing its rail and water lines or restricting the operation of trucks to non-competing routes.

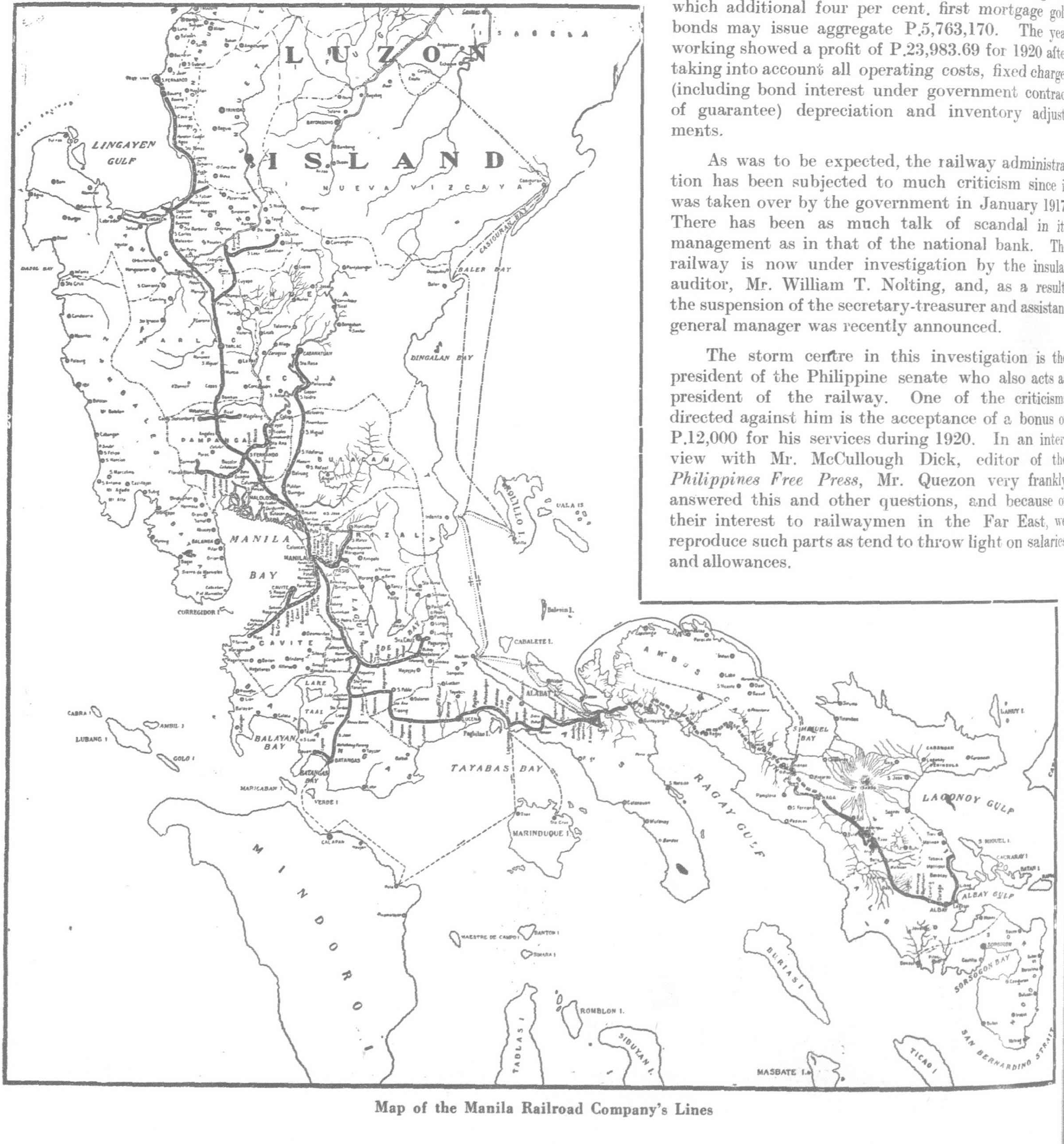
The motor truck owners have organized themselves to fight the "grasping railway monopoly," and the politicians are now placed between the devil and the deep sea. If they bolster up the railway against the transportation companies, the votes of the latter will defeat them at the polls, on the other hand, if the politicos fail to make the railway pay, it will be held against them as proof of incompetence and inexperience.

It seems to be a situation where the Filipino politician, in his anxiety to get all the revenue producing-public enterprises into his hands, have over-reached themselves.

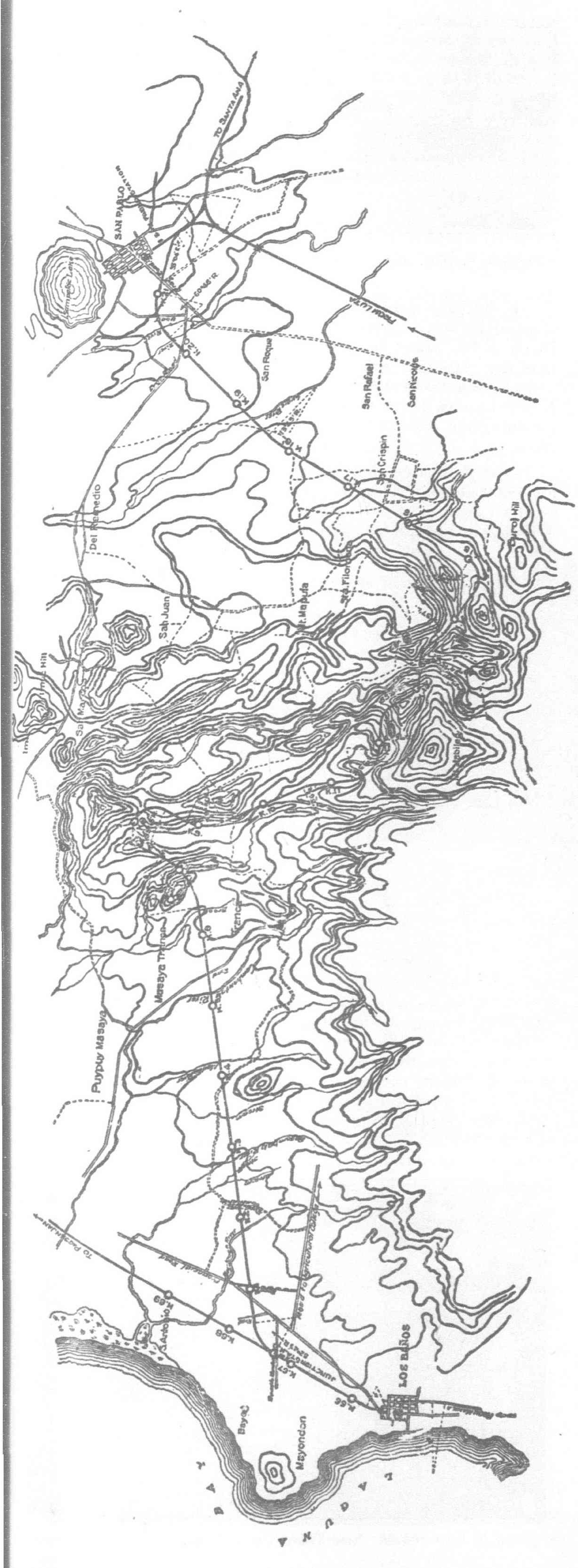
Through appropriations of the insular government the subscribed capital stock has been increased to P.20,127,000 and further increased this year by P.2,000,000 under Act 2960 of the Philippine legislature. The funded debt has been increased to P.54,278,000. The expenditures on the southern lines against which additional four per cent. first mortgage gold bonds may issue aggregate P.5,763,170. The year working showed a profit of P.23,983.69 for 1920 after taking into account all operating costs, fixed charges (including bond interest under government contract of guarantee) depreciation and inventory adjustments.

As was to be expected, the railway administration has been subjected to much criticism since it was taken over by the government in January 1917. There has been as much talk of scandal in its management as in that of the national bank. The railway is now under investigation by the insular auditor, Mr. William T. Nolting, and, as a result, the suspension of the secretary-treasurer and assistant general manager was recently announced.

The storm centre in this investigation is the president of the Philippine senate who also acts as president of the railway. One of the criticisms directed against him is the acceptance of a bonus of P.12,000 for his services during 1920. In an interview with Mr. McCullough Dick, editor of the *Philippines Free Press*, Mr. Quezon very frankly answered this and other questions, and because of their interest to railwaymen in the Far East, we reproduce such parts as tend to throw light on salaries and allowances.



Map of the Manila Railroad Company's Lines

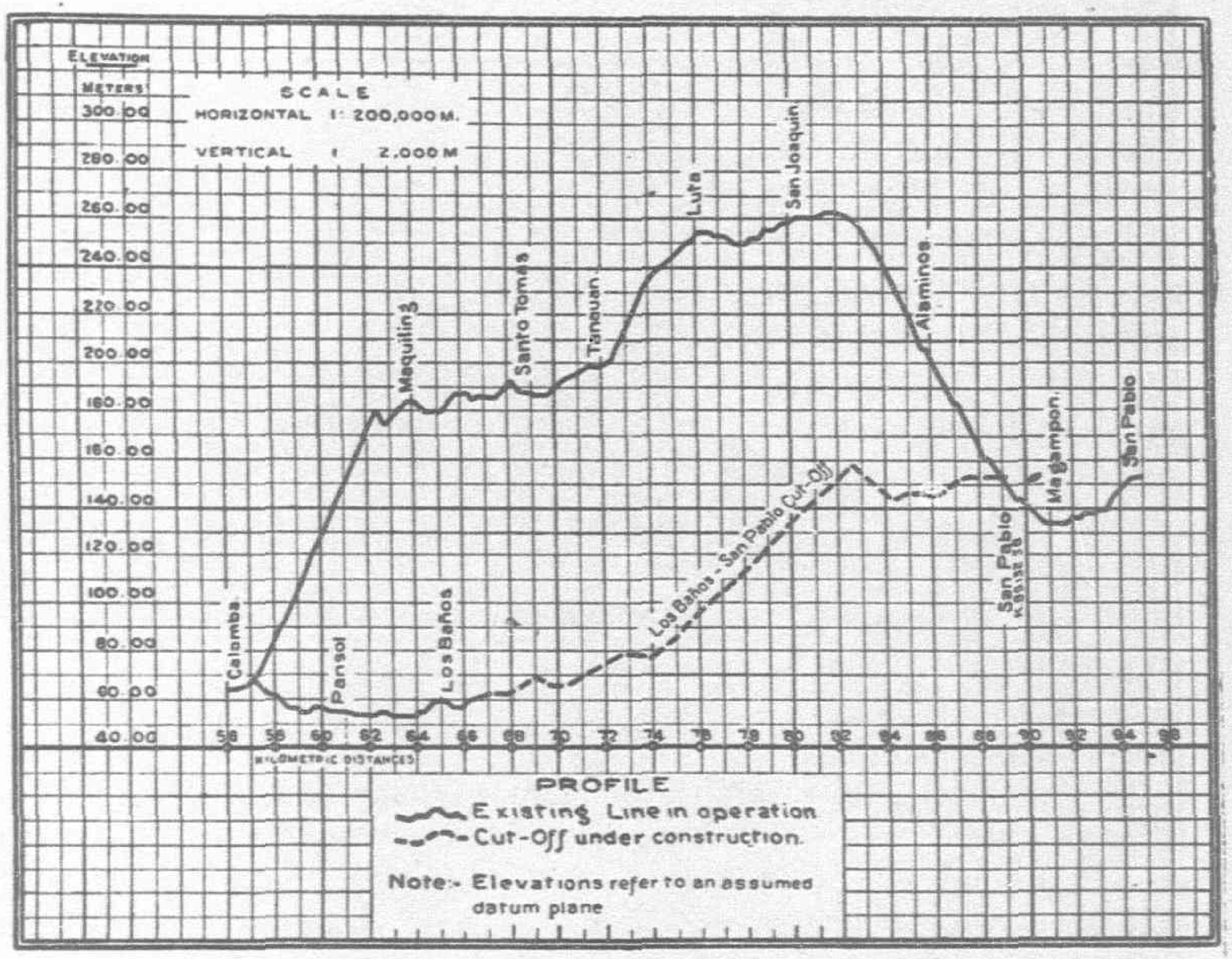


"It is, of course," said Mr. Quezon, "a delicate matter for me to speak about. However, considering that the former president, Mr. Higgins, received P.40,000 a year, which with free house, light, water, servants, etc., came to really about P.50,000 a year it was not excessive. Of course I realize that Mr. Higgins was an expert railroad man of long and valuable experience, and that he devoted all his time to the railroad company. However, the office carries with it, even in my case, quite a measure of responsibility."

"For attending meetings of the board of directors, the members, including myself, receive only P.20 each meeting, of which there are about twelve a year. That amount is the same as the directors used to receive when the railroad was under British control. It should be stated also that in the old days Mr. Metcalf, as vice-president and chairman of the board, in New York, with hardly any work to do, received P.15,000 a year.

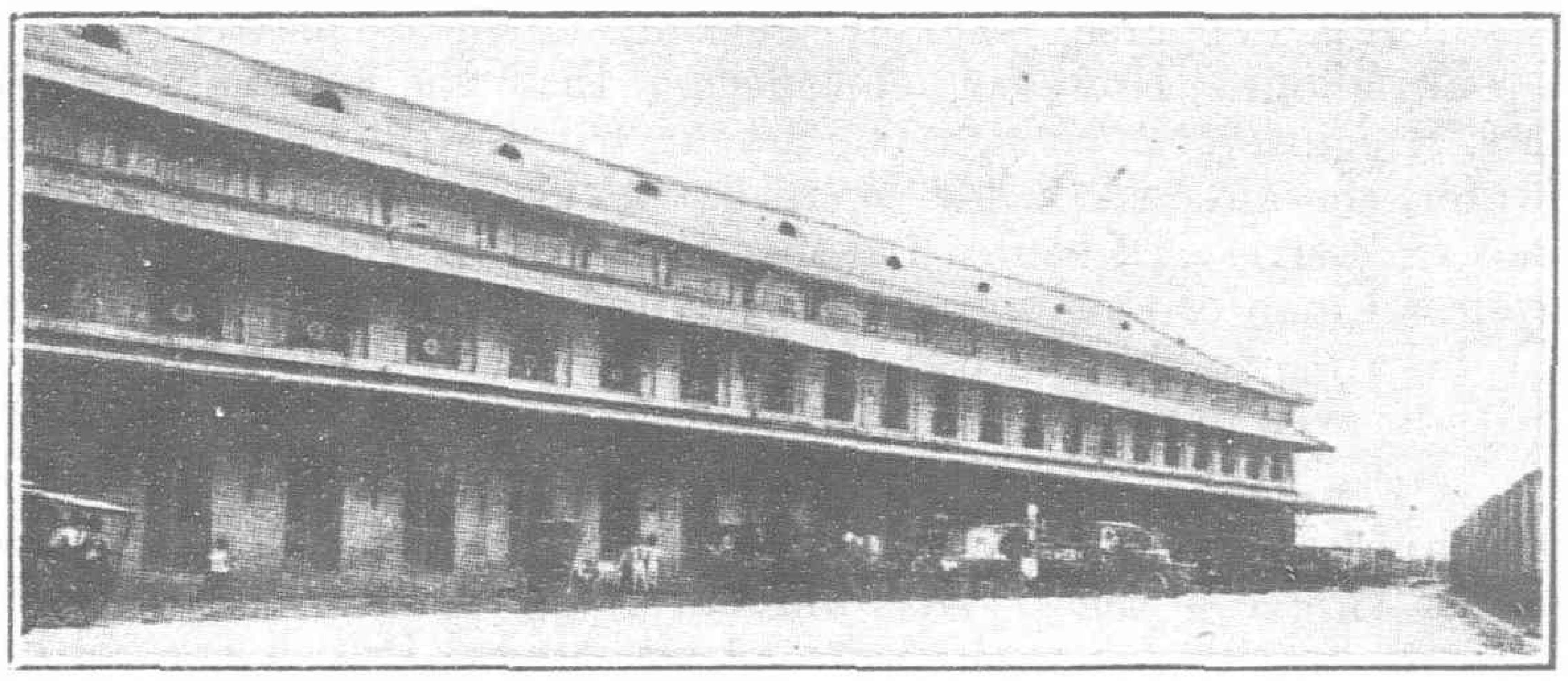
"Prior to 1918, when the government took control, the compensation for the president of the Manila Railroad Company cannot be estimated, as he was also general manager. The first year I was president of the company, I received a bonus, as president, of only P.6,000. The next year it was increased to P.8,000, and last year it was made the P.12,000 already referred to.

"In talking with Governor General Yeater about the matter, he said he thought it would be much better if the president of the railroad company were to be paid a regular salary. I told him that the practice followed is the old Spanish system, which provided for bonuses rather than salaries, or bonus and salaries, for directors of companies or corpoıations. This practice, I understand, obtains also with some of the English banks here, and also, I have heard, with some railroad companies in the United States, which pay the president both salary and bonus. Governor Yeater said he thought that there would be less carping, at least among Americans, if the P.12,000 were paid as salary rather than as a bonus, as Americans were accustomed to the salary idea. That may be true. Supposing that the salary of the president of the railroad company were put at P.12,000 a year, do you think anybody could say it was excessive? And I feel that I do a great deal more for the P.12,000 than Mr. Metcalf, the former vice-president and chairman of the board in New York, did for his P.15,000 a year.

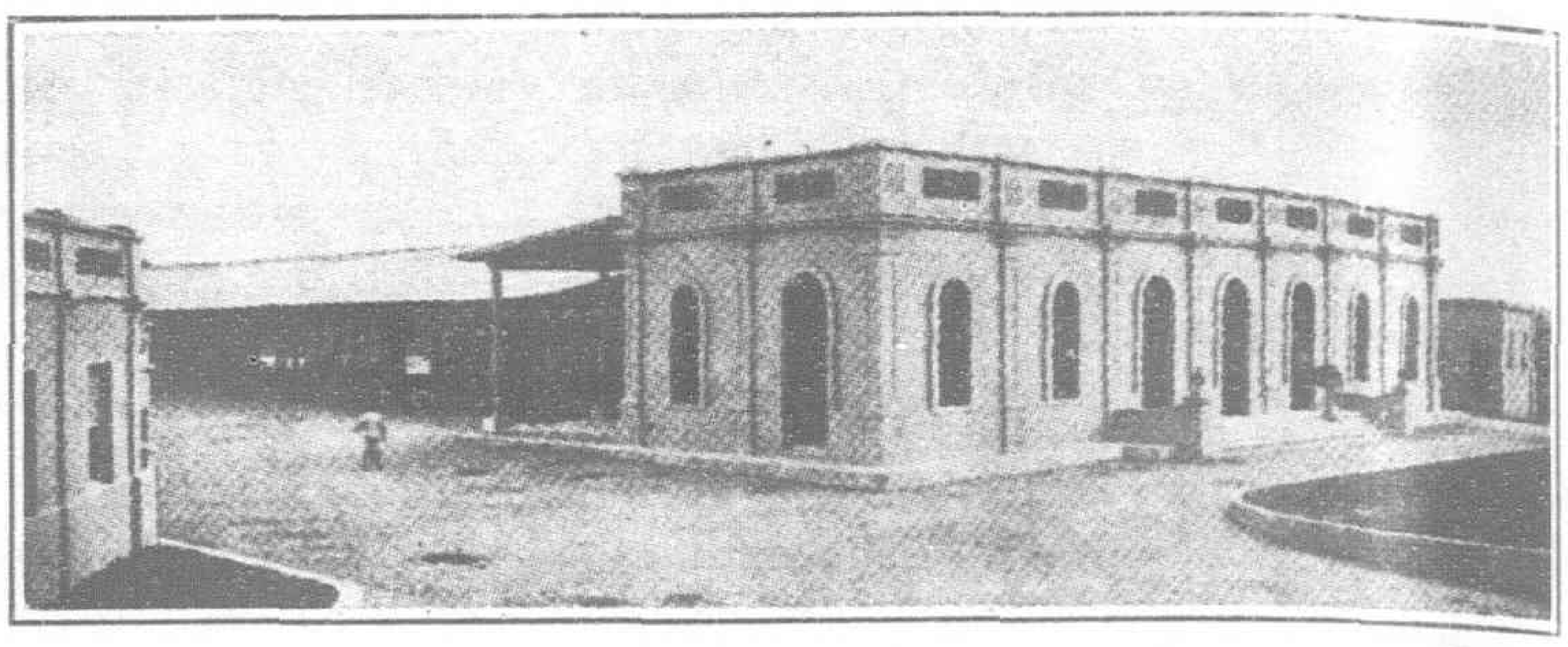


"Moreover, a comparative statement will show that the total salaries for the present administration, which is supposed to be so extravagant, are less than under the English administration. In the old days what may be called the administrative staff cost the company P.713,283.43 as against P.526,980.00 to-day, making a net economy of P.186,303.43 annually. This P.526,980.00 includes all administrative officials, staff employes, department heads and their principal assistants.

"I forgot to state that under the former administration, besides the P.15,000 annual compensation received by Mr. Metcalf as vice-president and chairman of the board in New York, the board employed a secretary at P. 5,000 annually and a stenographer



New Express Wing



Dagupan Station—Old and New (Estacion de Dagupan—Vieja Y Nueva)

at P.2,500 annually. For such meetings General McIntyre was allowed P.50 and Colonel Walcutt was allowed P.40, for expenses, in addition to their per diems of P.20. In the case of General McIntyre, the annual compensation, therefore, was P.1,080. In short, the board of directors under the English management, in addition to their per diems, received annually P.27,200 as against the P.5,000 in 1918, the P.6,000 in 1919, and the P.12,000 in 1920, allowed me. Surely nobody will say that is excessive or like looting the company."

Another interesting piece of general business information is contained in the answer of Mr. Quezon to the accusations that he made large sums from influencing the coal contracts of the railway, which, according to the report of the Manila testing laboratory (found elsewhere in this number of THE FAR EASTERN REVIEW) aggregate 80,000 tons per annum. In answer to this charge, Mr. Quezon gave out for publication an official memorandum on the coal contracts of the railway, prepared by the general manager, which follows :

Paco Station, Manila

"The contract under which coal was being delivered at the time the present management took over the railroad called for 50,000 tons of Chaokochwang coal at a price of $6.00 Chinese currency per ton, f.o.b. mines, plus 10 per cent. commission for Madrigal & Co. The seized German vessels were employed in transporting this coal.

The first bids for coal under the present management were opened on April 11th, 1918.

Madrigal & Company bid—

30,000 tons at P.47.45 per ton c.i.f. Manila Bay.
30,000 tons at P.49.00 per ton c.i.f. Manila Bay.

Mitsui Bussan Kaisha, Ltd.—

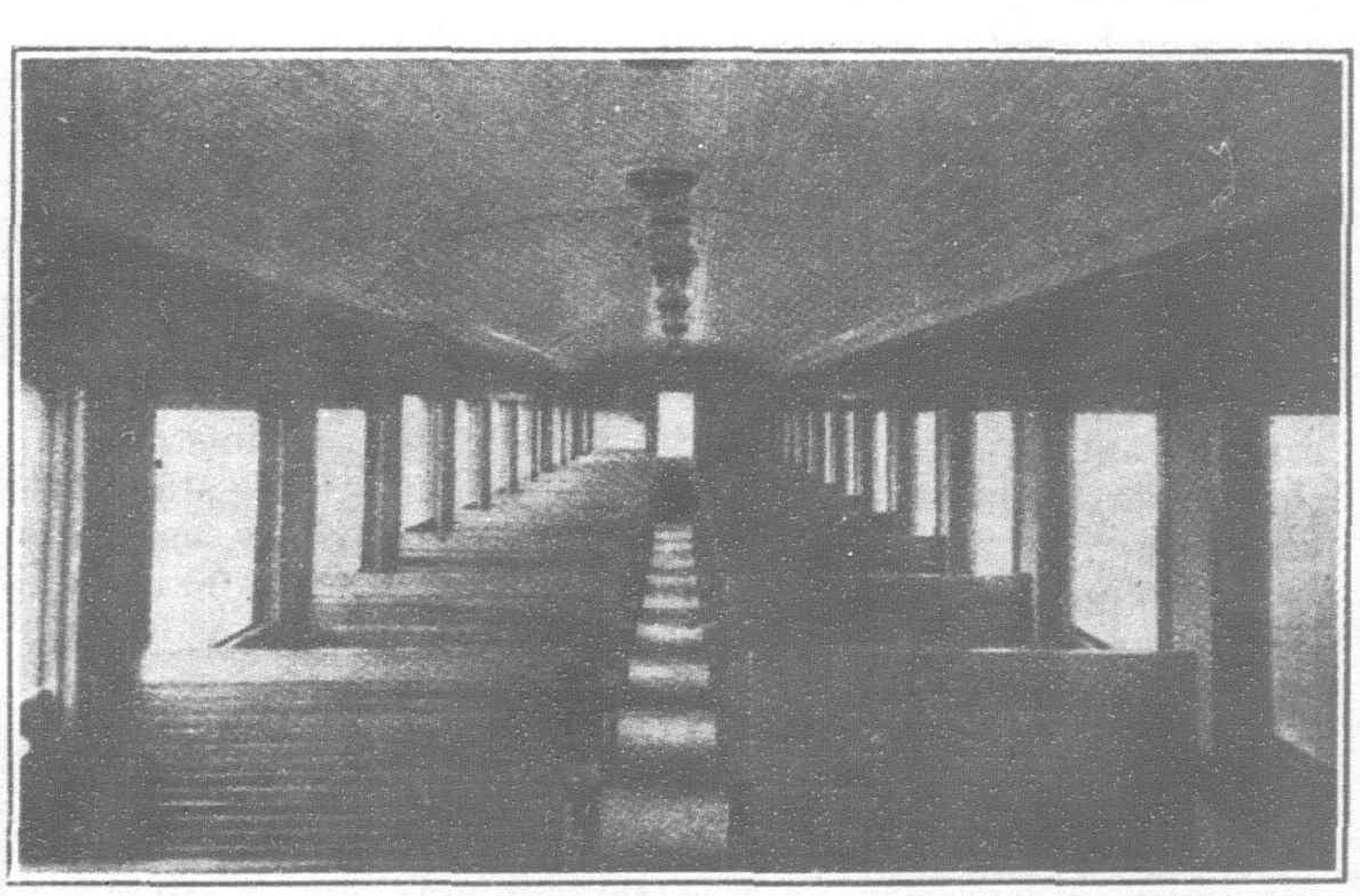
60,000 tons at P.55.50 per ton c.i.f. Manila Bay.

Both bids were on standard specifications. The fact that Macondray & Co., Inc., J. B. Redfern & Co., Ltd., and Sy Cong Bieng & Co. asked for particulars *re* specifications clearly shows that due publicity was given to the advertisement. These three firms later advised that they were unable to enter into competition. It will be seen that Madrigal & Company offered by far the most advantageous bid and the contract was accordingly awarded to them.

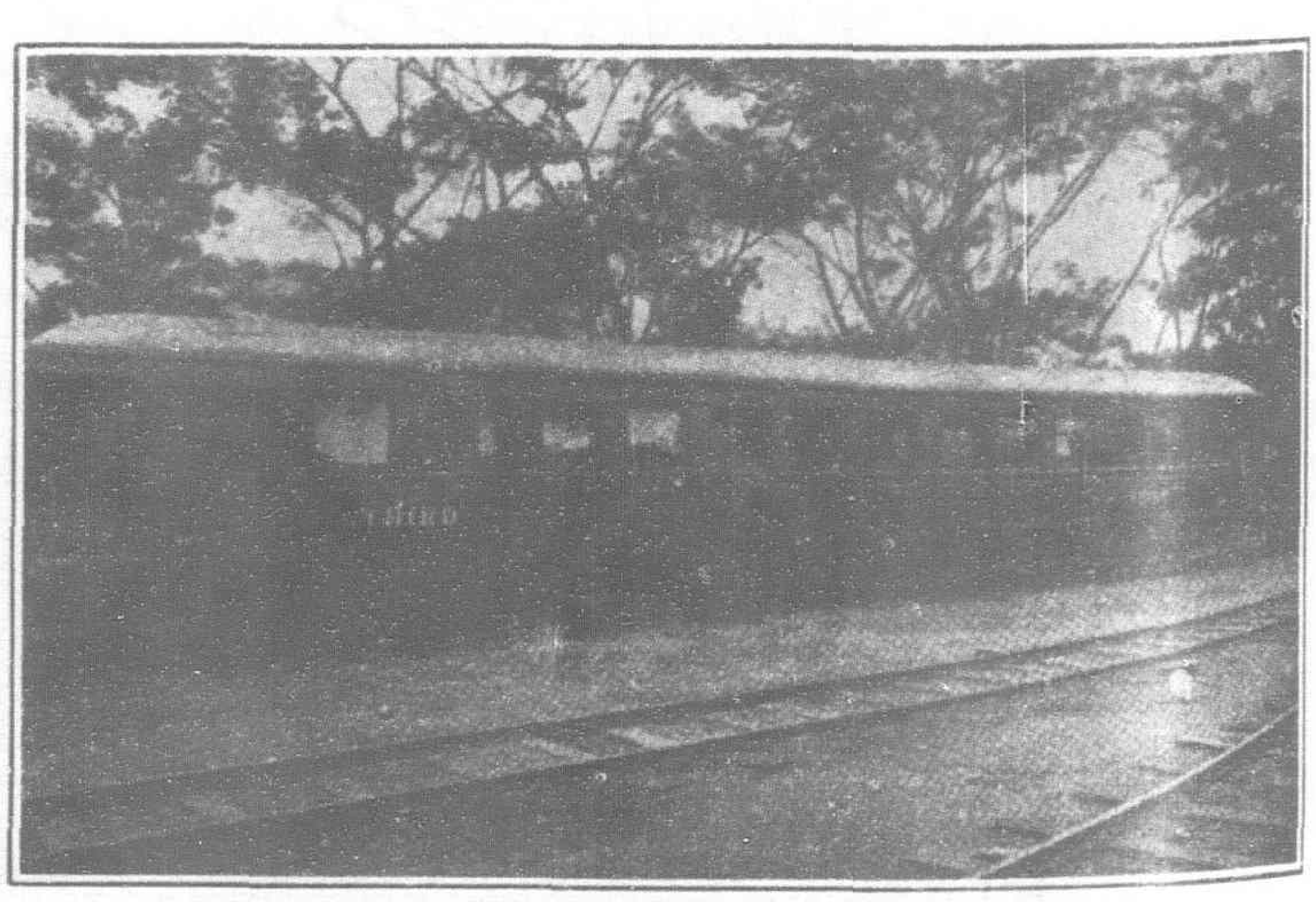
Coal deliveries were next requested under circular proposal for 15,000 tons, bids to be opened April 21, 1919. Five bids were received, the most advantageous offer being that of Macondray & Company at P.38.50 per ton c.i.f. Manila Bay. On this occasion the Madrigal & Company bid was P.40.00 per ton. The contract was accordingly awarded to Macondray & Company.

Coal deliveries were again requested under circular proposal and opened on June 27, 1919. Two bids were received, one from Mitsui Bussan Kaisha, Ltd. for 30,000 tons at P.39.20 per ton c.i.f. Manila and the other bid from Madrigal & Company for 30,000 tons at P.38.00 per ton c.i.f. Manila. The Manila testing laboratory, under letter of July 15th, 1919, recommended that the contract be awarded to Madrigal & Company, their bid being the most advantageous. Macondray & Company were unable to bid on account of lack of water transportation.

Coal deliveries were next requested under circular proposal for 50,000 tons. Bids were opened on December 5, 1919. Only two bids were received. Mitsui Bussan Kaisha, Ltd. offered a price of P.46.50 per ton c.i.f. Manila Bay, while Madrigal's offer was P.45.00 per ton c.i.f. Manila Bay, both bids being on Japanese coal. Madrigal & Company offered to substitute, in the event of a shortage of coal in Japan, Australian coal at P.52.00 per ton



Interior View



New Third Class Coach

or Indian coal at P.48.00 per ton. The bid of Madrigal & Company was accepted as the most advantageous. This contract was later amended (April 30th, 1920) to read "100,000 tons Australian coal with 7,400 guaranteed calories and 6 per cent. ash, at P.46.00 per ton." After completing approximately one-third of this contract, Madrigal & Company voluntarily offered to make a further reduction to P.38.00 per ton. Through the amended contract and voluntary reduction the Railroad Company made a saving of approximately P.78.000. Recently Madrigal & Co. made a further reduction of P3.00 per ton on 20,000 tons remaining to be delivered under the original contract, with a further saving for the Railroad Company of P.60,000, or a total of P.848,000. In addition, Madrigal & Company waived a bonus of approximately P.69,000, and paid penalties of approximately P.17,000.

Having reference to the contract recently awarded, bids were duly called for under public advertisement for between 40,000 and 80,000 tons of coal. Eight firms and individuals entered into competition. Compared on an equal basis, Madrigal & Company were again found to be the lowest bidders at P.22.35 per ton c.i.f. Manila Bay. The contract was accordingly awarded to Madrigal & Company for 50,000 tons.

These bids were opened by the secretary-treasurer and tabulated by the purchasing agent. They were then submitted to the Manila testing laboratory for comment and recommendation. After due consideration a committee consisting of the general manager, secretary-treasurer and purchasing agent recommended to the board of directors the acceptance of the Madrigal & Company bid as most advantageous. All bidders have had access to our records and been advised of the conditions on which the award was made.

(Sgd.) E. J. Westerhouse,
*General Manager.*

When the government acquired control over the road in January 1917, it took over a deficit of P.1,500,000. At the end of last year the road showed a profit of P.23,983 on a total investment of P.73,343,095. Authorized capital stock has been issued to the value of P.20,127,000, and the line has a bonded indebtedness of P.26,472,000 first mortgage five per cent. gold bonds on the northern lines, and P.27,806,000 in 4 per cent. gold bonds on the southern lines, a total of P.54,278,000. Since assuming ownership the government directorate has recognized the necessity for a betterment of the yards, station buildings, rolling stock, and a further extension of lines for the more rapid economic development of the country. A number of the most important station buildings have been repaired, remodeled and rebuilt, and the Manila terminal facilities enlarged and the car movement increased over fifty per cent.

The most important extension is embraced in the construction of the Legaspi lines to Naga and from there to the port of Raqay at an estimated cost of P.6,000,000, and the main line extension south to the Guinaganyan River. The Naga extension was completed and placed in operation on April 1st, 1920, and the Guinaganyan extension was expected to be placed in operation of June of this year. The extension of the Cabanatuan line to Ilagan, Isabella province, at a cost of P.24,000,000 is also urgently needed in order to tap and develop the great agricultural resources of the Cagayan and Nueva Vizcaya valleys. The most important piece of construction has been the Los Banos-San Pablo cut-off, which also is rapidly nearing completion. The length of this cut-off is 21.8 kilometres with a maximum grade of 1 per cent. compensated as against a 2.5 per cent. adverse grade on the present line through Luta. The new line will be 5.8 kilometres shorter with an estimated economy in operation of P.500,000 annually. The estimated cost of this work is P.1.000,000.

The several sugar centrals and other industrial concerns have made necessary the construction of many new spurs and sidings,

**Mount Mayon, the Most Perfect Volcanic Cone in the World, Albay Province, on the Line of the Manila Railway**

and to afford adequate facilities for the handling of express cargo an extension was built to the east wing of the Tondo main station building at Manila with a ground floor area of 12.64 by 42.64 metres. This building is of reinforced concrete, Truscon design, with steel roof framing and iron roof, and cost P.102,624, exclusive of plumbing, painting and fixtures. A feature of the new work in the past year was the replacing of 710 wooden poles by reinforced concrete poles at a total cost of P.59,221.

Delivery of the twenty-five new third-class coaches was effected late in 1920. All wood work is of Philippine hardwood (Ipil) sized and finished in our Caloocan shops. Each coach will have a seating capacity of 156 passengers.

Thirty new locomotives were contracted for under the following conditions :—

AMERICAN LOCOMOTIVE COMPANY

| TYPE. | COST. | Initial payments, January 1, 1921. | Annual payments, January 3, 1922-23-24-25-26. |
|---|---|---|---|
| Mountain 171-180 (62729-62738) | $537,000 | $134,670 | $163,000 puls 7 per cent. interest semi-annually. |
| Santa Fe 201-210 (62739-62748) | 550,800 | 138,130 | |

H. K. PORTER COMPANY

| TYPE. | COST. | Initial payments, March 1, 1921. | Annual payments, March 1, 1922-23-24-25-26. |
|---|---|---|---|
| Wheeler (6624-6633) | $360,150 | $90,150 | $54,000 plus 7 per cent. interest semi-annually. |

Deliveries began early in 1921 and continue at the rate of five locomotives each month until the entire order has been filled. It will be observed that payments extend over a period of five years under very favorable conditions, deferred payments being guaranteed under a chattel mortgage agreement with the manufacturer.

Practically all imported materials and supplies are purchased through Mr. H. L. Hershey, Philippine government purchasing agent in the United States with offices in the Whitehall Building, New York.

The lines as now operated offer travelers and sightseers an opportunity at a moderate cost and within a limited time to observe at close range practically every phase of provincial life in the tropics. For the northern trip the Baguio express leaves Manila station daily at 8 00 a.m. The first important stop is at Malolos, the seat of the first Filipino republic. Enroute the traveler passes first through a densely populated community of small farmers dedicated to the planting of rice. There the land holdings are so limited in size that no machinery is employed in either the planting or harvesting of the rice crop.

After Malolos the line extends through the heart of Pampanga, a sugar-producing province where cane fields are largely in evidence. Modern sugar centrals are projected and in course of construction which will materially increase the already heavy traffic over the company's lines. The extent to which this may develop is best realized when we consider that the Pampanga acreage to the growing of sugar-cane actually exceeds the total cane acreage of the Hawaiian group.

Continuing his journey the traveler passes through Tarlac and Pangasinan, the granary of the Philippines and the source of the Company's greatest revenue. At Mangaldan the Benguet Auto Line connects with the "express" and lands the travelers in Baguio well before dark. If he chooses, however, he may continue to the railroad terminal at Bauang and then proceed to Baguio over the scenic Naguilian Road. This course takes him through the tobacco fields of La Union, second only in extent to those of the Cagayan Valley.

Of the branch lines the Cabanatuan extension is by far the most productive in revenue for the Company. This line will eventually extend into the Cagayan Valley through Nueva Vizcaya. With the construction of the Cabanatuan branch, the province of Nueva Ecija had an influx of settlers, became second in the production of rice and promises to surpass Pangasinan in the near future. Travelers can now make the trip to Cabanatuan without change and return to Manila the same day. In the harvesting of rice modern machinery is there used and extensive areas are cultivated in single tracts making the trip of special interest to tourists.

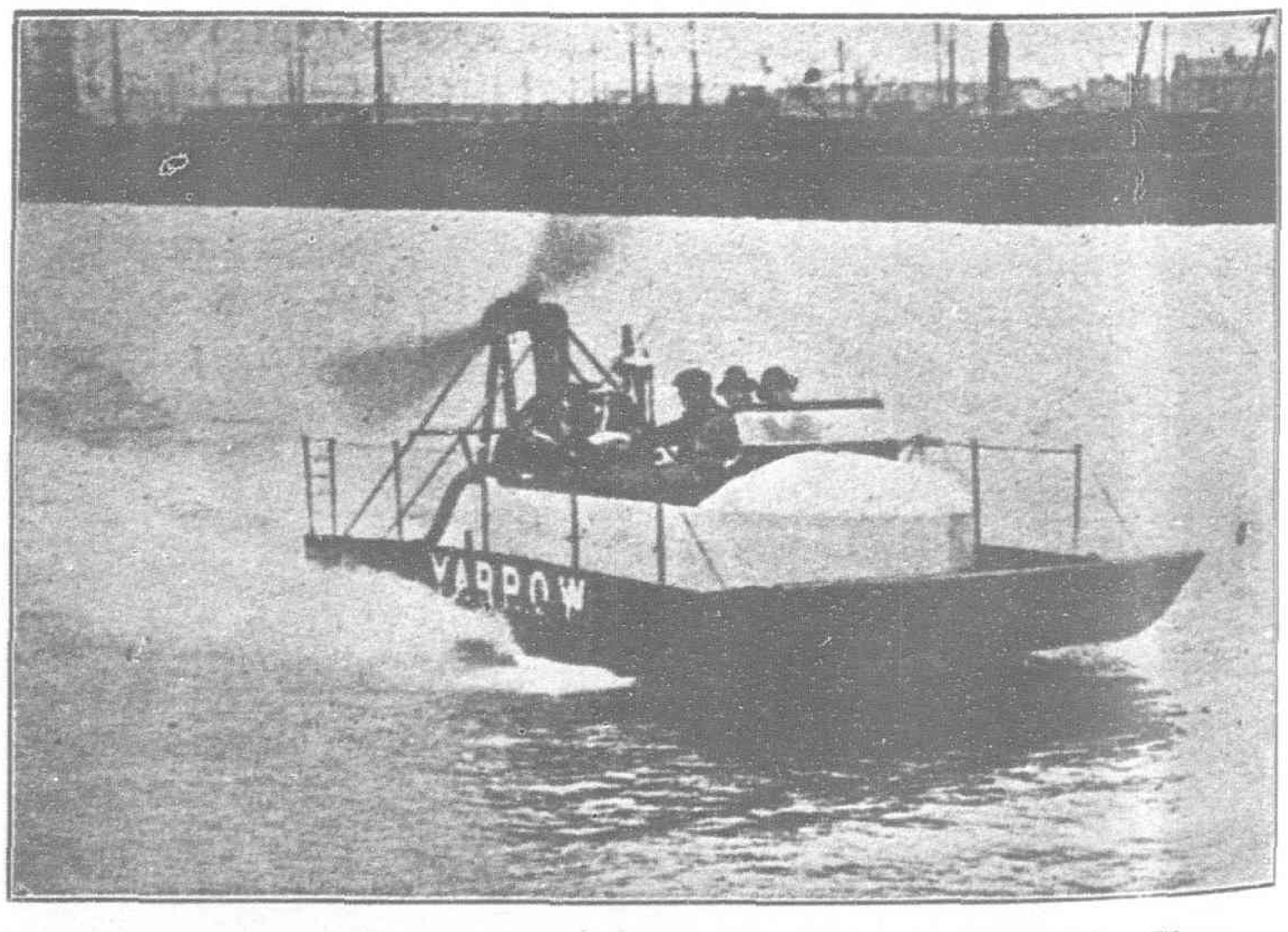
The main line south offers a special attraction for tourists in that the route extends through a veritable coconut forest embracing the provinces of Laguna and Tayabas. A daily service is maintained on this run, the "Bicol Express" operating between Manila and Hondagua on the Pacific coast. Connection is made with the Pagsanjan and Batangas branches, both including points of special interest.

When the lines are completed through to Legaspi and the tourist can be brought through the wonderland of palms and coconuts to the base of the beautiful Mayon volcano, one of the sights of the world, it will undoubtedly provide an added inducement for visitors to spend more time in the islands. With this in view, the Railway directorate has determined upon a plan to construct a chain of hotels along its lines for the convenience and accommodation of the traveling public.

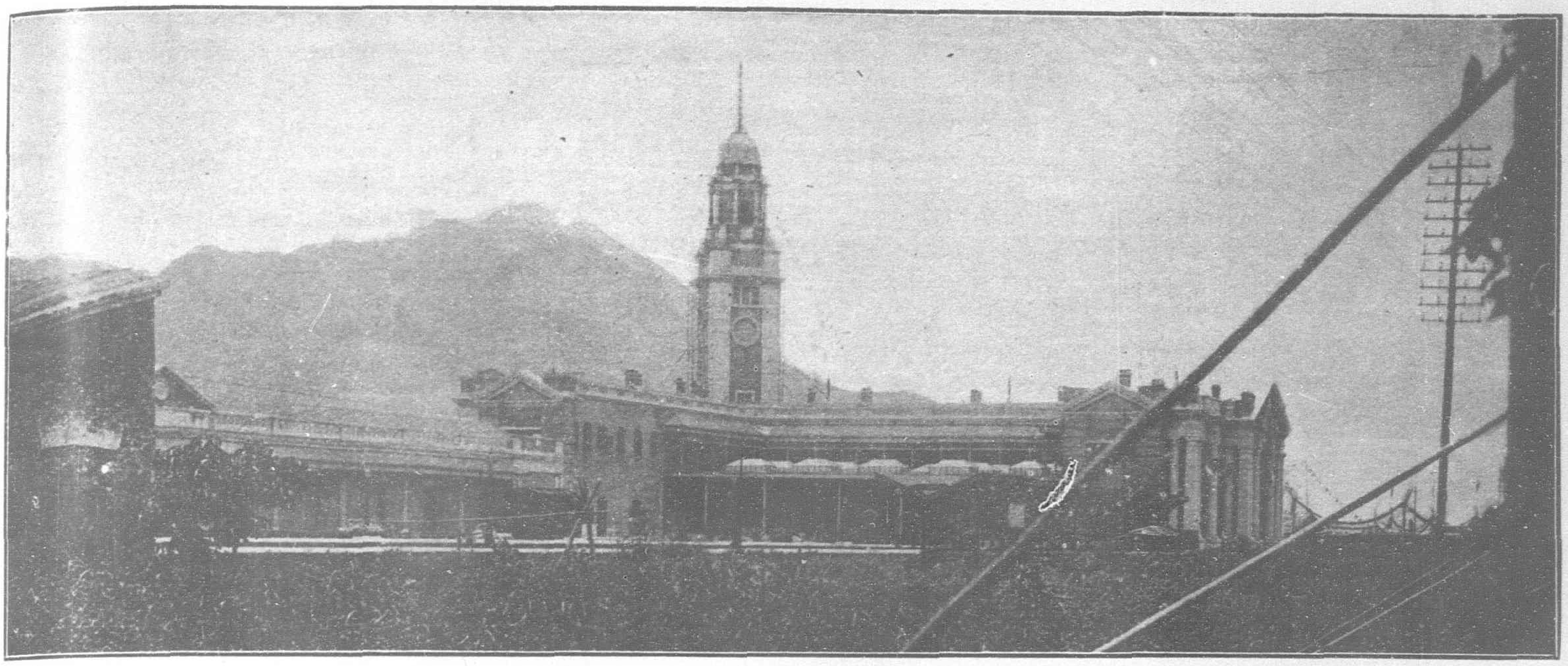
The Company recognizes that, by providing good hotels at the remote and beautiful places along its routes, many tourists and holiday makers will be attracted to points distant from their homes, and increased passenger traffic will result. These hotels will afford temporary lodging for the traveler bent upon errands of business and will afford a place of rest and recreation for those whose object is sight-seeing and pleasure. Because of the objectionable feature of noise, vibration and dirt, it is planned to build apart from the stations, away from the tracks, and not abutting directly on the railway lines.

## A New Type of Shallow Draft Vessel

Considerable interest is being shown in the skimming boat which Messrs. Yarrow & Company, of Glasgow, Scotland, are running on the Clyde, both river and firth, and which is propelled by an aeroplane type petrol engine and air propeller. The hull is of the hydroplane type.



The Yarrow Skimming Boat at a Speed of 50 Miles Per Hour



New Terminal Station and Administrative Offices of the Kowloon-Canton Railway at Kowloon

# Kowloon-Canton Railway, British Section

THE report of the Kowloon-Canton Railway for 1920 shows receipts from all sources of $520,176 an increase of $30,000 over the previous year. This slight advantage is offset by the steady rise in costs for materials, labor, etc., sending the total working expenses up to $487,144, and leaving a surplus for the year of only $33,032. With a capital investment which now stands at $14,710,917 the showing must be far from satisfactory for the colonial government who owns and operates the road and must emphasize the necessity of creating industries and developing the resources not only of the New Territories, but of the adjoining province of Kwangtung, in order to bring an adequate return on the investment. Reference to the article on "Hongkong's Industrial Future," appearing in another part of this number of THE FAR EASTERN REVIEW, will indicate that if the projected iron and coal mining enterprises are carried out, a brilliant future will open up for the Railway. No great prosperity can, however, come to the line, until the Canton-Hankow Railway is completed, and the products of Hunan and Kwangtung find an outlet to the sea. Much will hinge, however, on the ultimate outcome of plans and dreams now indulged in by Dr. Sun Yat-sen and other Chinese authorities for the transformation of Canton into a deep-water port and railway terminus. If these plans prevail, then the future prosperity of the British section of the Kowloon-Canton line must be sought in the development of districts served by the line, and this will hinge largely on the success of the schemes for the exploitation of coal mines in Kwangtung that in turn will permit the establishment of an iron and steel industry in the New Territories.

The railway, report which we have overlooked in the above digression, goes on to give the usual cold looking figures necessary for the government auditor and inquisitive ratepayers, which do their best to deprive the document of interest to the man in the street. However, Mr. Winslow says that the local traffic earnings for the year have improved.

The receipts amounted to $194,041.14 against $179,434.14 or $14,607.00 more than the previous year, the increase being under passenger receipts. Through and joint sectional traffic receipts were $318,345.37, an increase of $16,017.63 when compared with 1919. The gross receipts for the year were $520,176.10, as against $490,092.77 for 1919, an increase of $30,083.33.

The balance after paying working expenses stands at $33,032.06 which is $40,028.57 less than the previous year. This difference, however, is more than accounted for by the general increase in salaries granted to the staff, the high cost of coal, and sleeper renewals mentioned in previous paragraphs.

For the past 5 years the results are as follows :—

| | *Gross Receipts.* | *Working Expenses.* | *Net Receipts* |
|---|---|---|---|
| 1916 ... | ... $366,215.67 | $296,691.63 | $69,524.04 |
| 1917 ... | ... 428,246.46 | 337,431.48 | 90,814.98 |
| 1918 ... | ... 433,274.43 | 356,221.07 | 77,053.36 |
| 1919 ... | ... 490,092.77 | 417,032.14 | 73,060.63 |
| 1920 ... | ... 520,176.10 | 487,144.04 | 33,032.06 |

The through and joint sectional passengers carried in 1920 were as follows : Passengers booked by station in British Territory to stations in China 365,665 : Passengers booked by stations in China to stations in British Territory 373,776. The local passengers carried were as follows: Main Line, 392,206 ; Fanling Branch, 47,787.

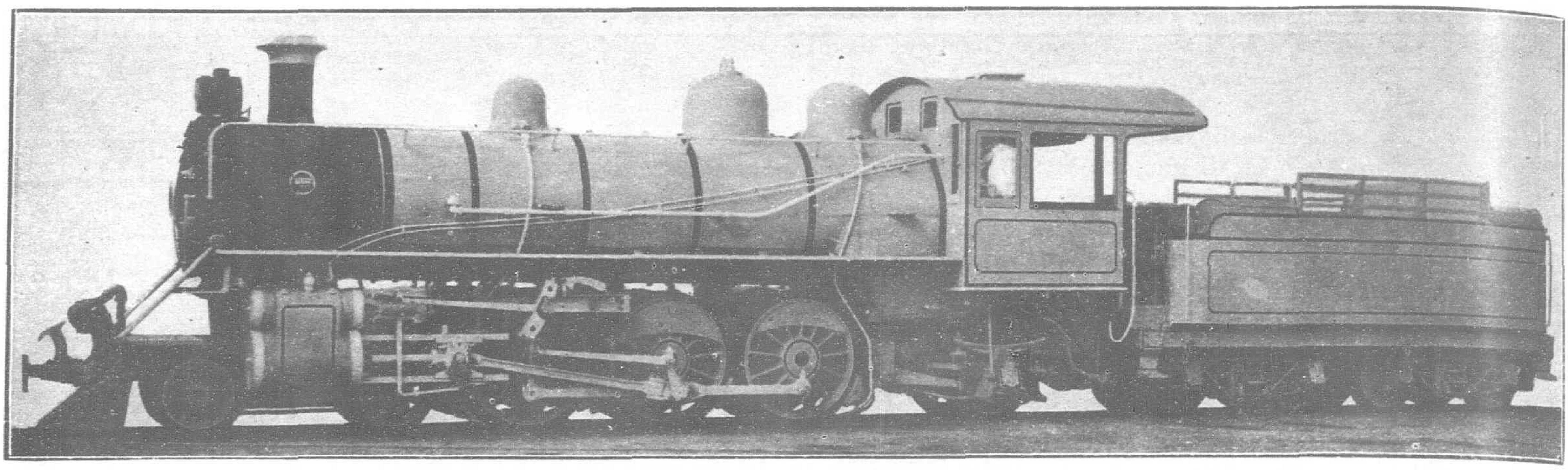
*Locomotives.*—There were no additions to rolling stock during the year. There are thirteen locomotives eight of which are "Kitson Clarke" 2:6:4 side tank 19" by 26" cylinder, with a tractive force of 27.724-lbs., weight 89 tons and 15 cwts.; 2 "Hudswell" saddle tank 0:6:0, cyl. 14 by 20-ft., 10,604-lbs. tractive force, weight 29 tons and 7 cwt. ; 2 "Hudswell Clarke," side tank 0:4:0, 5 tons and 3 cwts. weight for the 2 foot gauge ; and one Orenstein Koppel 0:4:0, 10 tons for the 2-foot gauge.

*Coaches.*—There are a total of 28 coaches for the standard gauge main line as follows :

1 first-class saloon coach, 2 first-class dining cars, 1 first-class carriage, 2 second-class carriages, 4 first and second composite carriages, 14 third-class carriages, 4 third luggage and brake.

In addition there are 6 coaches for the 2-foot gauge as follows :

1 eight wheeled bogie first-class carriage ; 1 eight wheeled bogie first-class and brake ; 1 eight wheeled third-class and carriage ; 1 eight wheeled third-class and brake van.



4-6-2 Type of Locomotive Supplied to the F.M.S. Railways by the Baldwin Locomotive Works

# Federated Malay States Railways

DURING the four years of the war with Germany, the Federated Malay States Railways deferred placing even the most urgent and essential orders for locomotives and rolling stock because of the enormous demand for them by the allied governments for military transportation purposes. However, at the termination of the war these railways had so considerably expanded during that period and had so greatly increased their passenger and freight traffic that they were compelled to secure as much additional motive power as possible with a minimum delay.

The Federated Malay States Railways own and operate over 1,000 miles of metre gauge track. The main line runs practically the length of the Malay Peninsula, connecting Bangkok and Singapore. From this main line are various other smaller branch lines for local passenger and freight service. Their motive power consists of 202 steam locomotives of various types with their tenders; 560 coaches are used for the accommodation of passengers. The railways employ for the handling of freight, 4,154 cars; in addition to this, they operate a marine service which consists of steamboats, tugs and ferries. This service is accommodated by the railways' own harbors, docks and wharves.

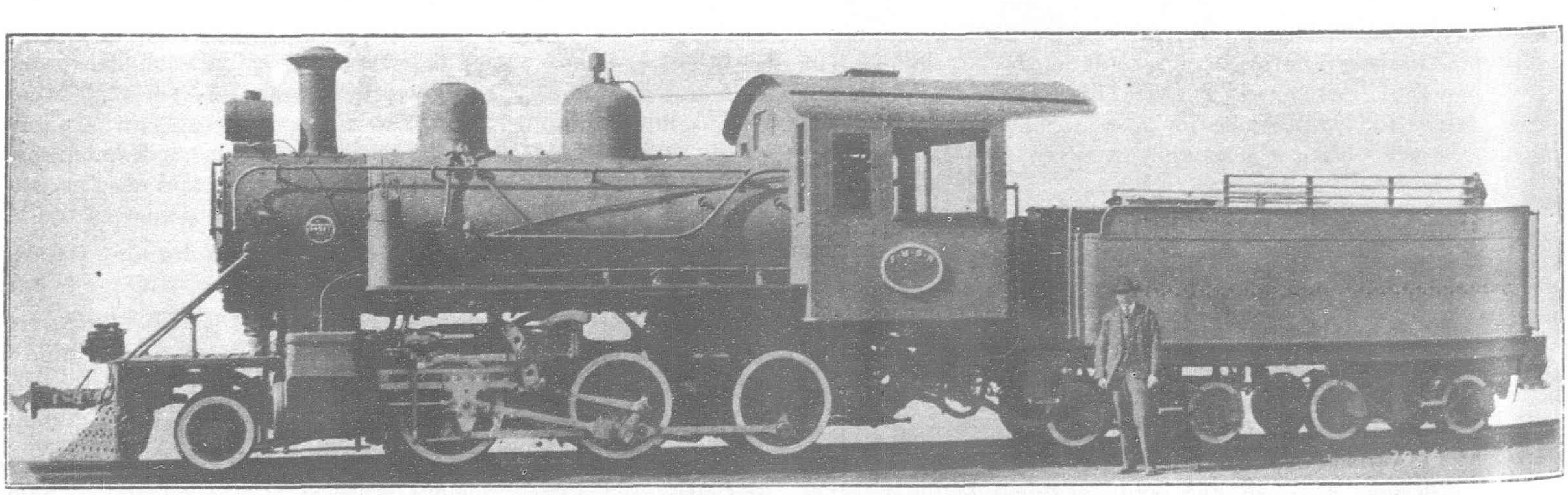
As the traffic on these railways so materially augmented during and after the war, they placed an order with The Baldwin Locomotive Works for twelve "Pacific" type locomotives for combined passenger and freight service. These engines were built in 1919 and delivered to the Federated Malay States Railways at Port Swettenham. They had 17-in. cylinders with a 24-in. stroke operated by 8-in. piston valve and actuated by Walschaert valve gear. They were equipped with American design superheaters and weighed 177,600-lbs., including the tender fully loaded.

These Baldwin engines, which were the first American locomotives to be placed in service in the Malay States, gave such satisfaction that in September, 1920, the railways supplemented their previous order by twenty more engines of two distinct types. This order consisted of ten "Mogul" (2–6–0) type locomotives for freight service and ten six-coupled side tank locomotives (0–6–0) for shunting and general freight service.

After having been inspected by a representative of Messrs. Rendel, Palmer and Tritton, London, the engines, which were built in the Philadelphia and Eddystone plants of The Baldwin Locomotive Works in fifty-eight working days, were shipped aboard the steamer *Celtic Prince* April 23, 1921, to be delivered at Port Swettenham, Malay Peninsula.

The contract for the twenty engines mentioned was given to The Baldwin Locomotive Works on account of the rapid delivery which it was possible for this Company to make and also because of the excellent service rendered by the previous orders of twelve "Pacific" type engines. Due to existing conditions in England and based on statistics obtained from recent deliveries made by English locomotive manufacturers, it would appear that the delay between receipt of an order and the actual date of delivery is of considerable length. The Baldwin Locomotive Works were able to make an almost immediate delivery of the locomotives of which the Federated Malay States were so greatly in need.

The engines are of the most up-to-date type and have open bar frames of the best steel. They are equipped with American outside equalized steam brakes applied to all the driving wheels and with automatic vacuum brakes applied to all the tender wheels with train connections at the front of the engine and at the back of the tender. These are designed to interchange and operate



2-6-0 Type of Locomotive

with the railways' standard Gresham and Craven system. Hand brakes are applied on all tender wheels. In addition to the vacuum brakes, an independent engineer's valve is mounted in the cab to operate the steam driving wheel brakes.

The engines were designed to operate on rails of 3-ft. 3⅜-in. gauge, 2½-in. gradient, and over curves of a radius of 16 degrees. Their detailed specifications are listed below:

### CLASS 2-6-0

| | |
|---|---|
| Gauge | 3' 3⅜" |
| Cylinders | 14" × 18" |
| Valves | Balanced |

#### BOILER

| | |
|---|---|
| Type | Straight |
| Diameter | 52" |
| Thickness of barrel sheets | ½" |
| Working pressure | 160-lbs. |
| Fuel | Coal or wood |

#### FIREBOX

| | |
|---|---|
| Material | Steel |
| Staying | Radial |
| Length | 69 3/16" |
| Width | 27¼" |
| Depth, front | 53" |
| ,, back | 51½" |
| Thickness of sheets, sides | ⅜" |
| ,, back | 5/16 |
| ,, crown | ⅜" |
| ,, tube | ½" |

#### WATER SPACE

| | |
|---|---|
| Front | 3½" |
| Sides | 2½" |
| Back | 2½" |

#### TUBES

| | |
|---|---|
| Diameter | 2" |
| Material | Steel |
| Thickness | No. 12 W.G. |

#### HEATING SURFACE

| | |
|---|---|
| Firebox | 88 sq. ft. |
| Tubes | 674 sq. ft. |
| Total | 762 |
| Number | 153 |
| Length | 8' 6" |

#### DRIVING WHEELS

| | |
|---|---|
| Diameter, outside | 37" |
| ,, centre | 31½" |
| Journals, main | 6" × 7" |
| ,, other | 6" × 7" |

#### ENGINE TRUCK WHEELS

| | |
|---|---|
| Diameter, front | 24" |
| Journals | 4" × 6" |

#### WHEELBASE

| | |
|---|---|
| Driving | 9' 8" |
| Rigid | 9' 8" |
| Total engine | 15' 11" |
| Total engine and tender | 39' 3" |

#### WEIGHT

| | |
|---|---|
| On driving wheels | 52,000-lbs. |
| On truck, front | 10,000-lbs. |
| Total engine | 62,000-lbs. |
| Total engine and tender | 109,000-lbs. |

#### TENDER

| | |
|---|---|
| Wheels, number | Eight |
| ,, diameter | 24" |
| Journals | 3¾" × 7" |
| Tank capacity | 2200 U.S. Gal. |
| Fuel ,, | 2 cords |
| Service | Passenger and Freight |

### CLASS 0-6-0

| | |
|---|---|
| Gauge | 3' 3⅜" |
| Cylinders | 16" × 20" |
| Valves | Balanced |

#### BOILER

| | |
|---|---|
| Type | Straight top |
| Diameter | 44" |
| Thickness of Barrel sheet | 7/16" |
| Working pressure | No. 160 |
| Fuel | Soft coal |

#### FIREBOX

| | |
|---|---|
| Material | Steel |
| Staying | Radial |
| Length | 64 3/16" |
| Width | 27" |
| Depth, front | 41¾" |
| ,, back | 40⅜" |
| Thickness of sheets, sides | ⅜" |
| ,, back | 5/16" |
| ,, crown | ⅜" |
| ,, tube | ½" |

#### WATER SPACE

| | |
|---|---|
| Front | 3½" |
| Sides | 2½" |
| Back | 2½" |

#### TUBES

| | |
|---|---|
| Diameter | 2" |
| Material | Steel |
| Thickness | No. 12 W.G. |
| Number | 103 |
| Length | 9' 4" |

#### HEATING SURFACE

| | |
|---|---|
| Firebox | 59 sq. ft. |
| Tubes | 499 sq. ft. |
| Total | 558 sq. ft. |
| Grate area | 12 sq. ft. |

#### DRIVING WHEELS

| | |
|---|---|
| Diameter, outside | 42" |
| ,, centre | 36½" |
| Journals, main | 7" × 7" |
| ,, others | 7" × 7" |

#### WHEELBASE

| | |
|---|---|
| Driving | 10' 0" |
| Rigid | 10' 0" |
| Total engine | 10' 0" |

#### WEIGHT

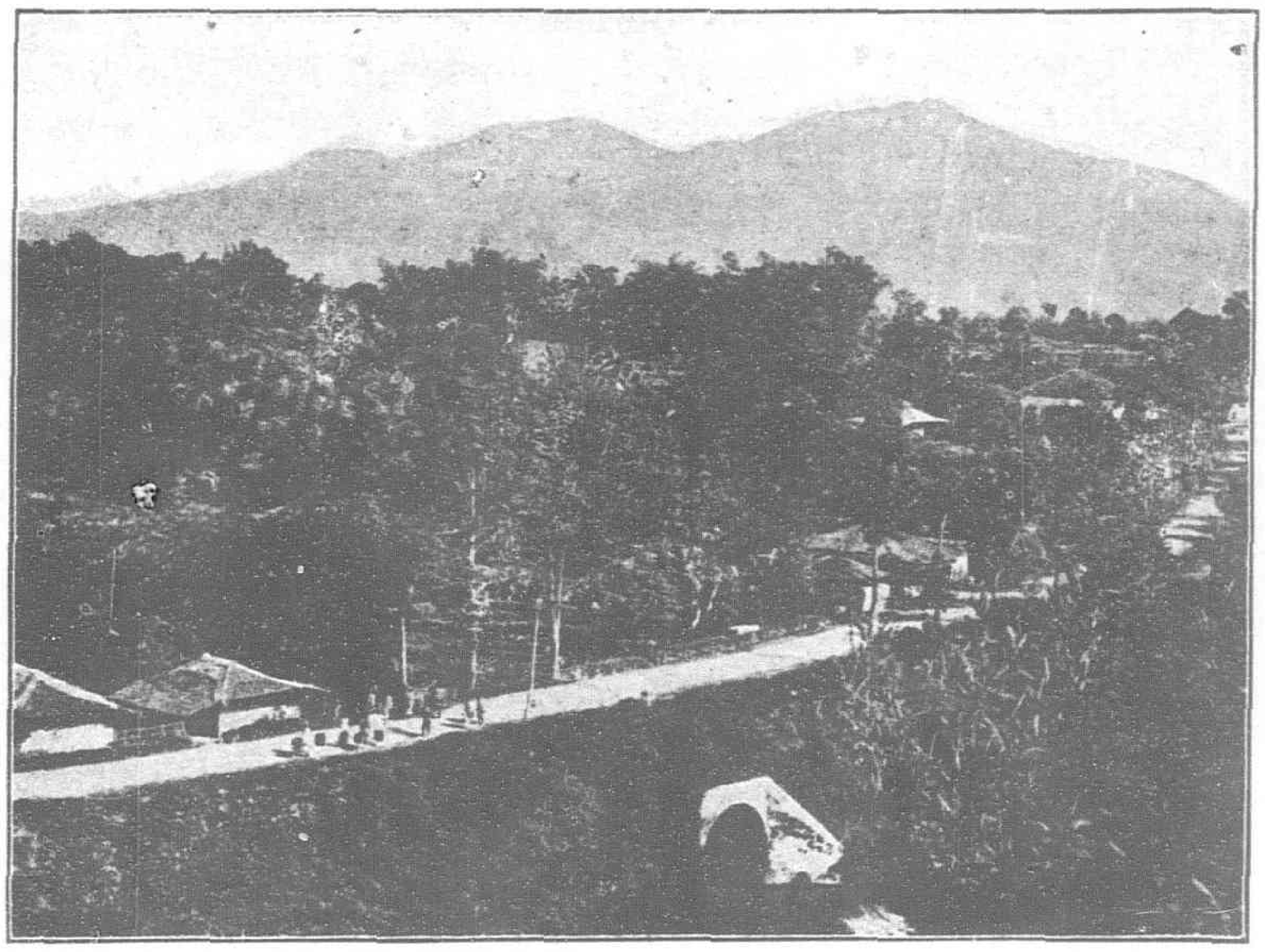
| | |
|---|---|
| On driving wheels | 78,000-lbs. |
| Total engine | 78,000-lbs. |
| Tank capacity (side) | 1200 U.S. gal. |
| Fuel ,, | 2 tons |
| Service | Switching |

---

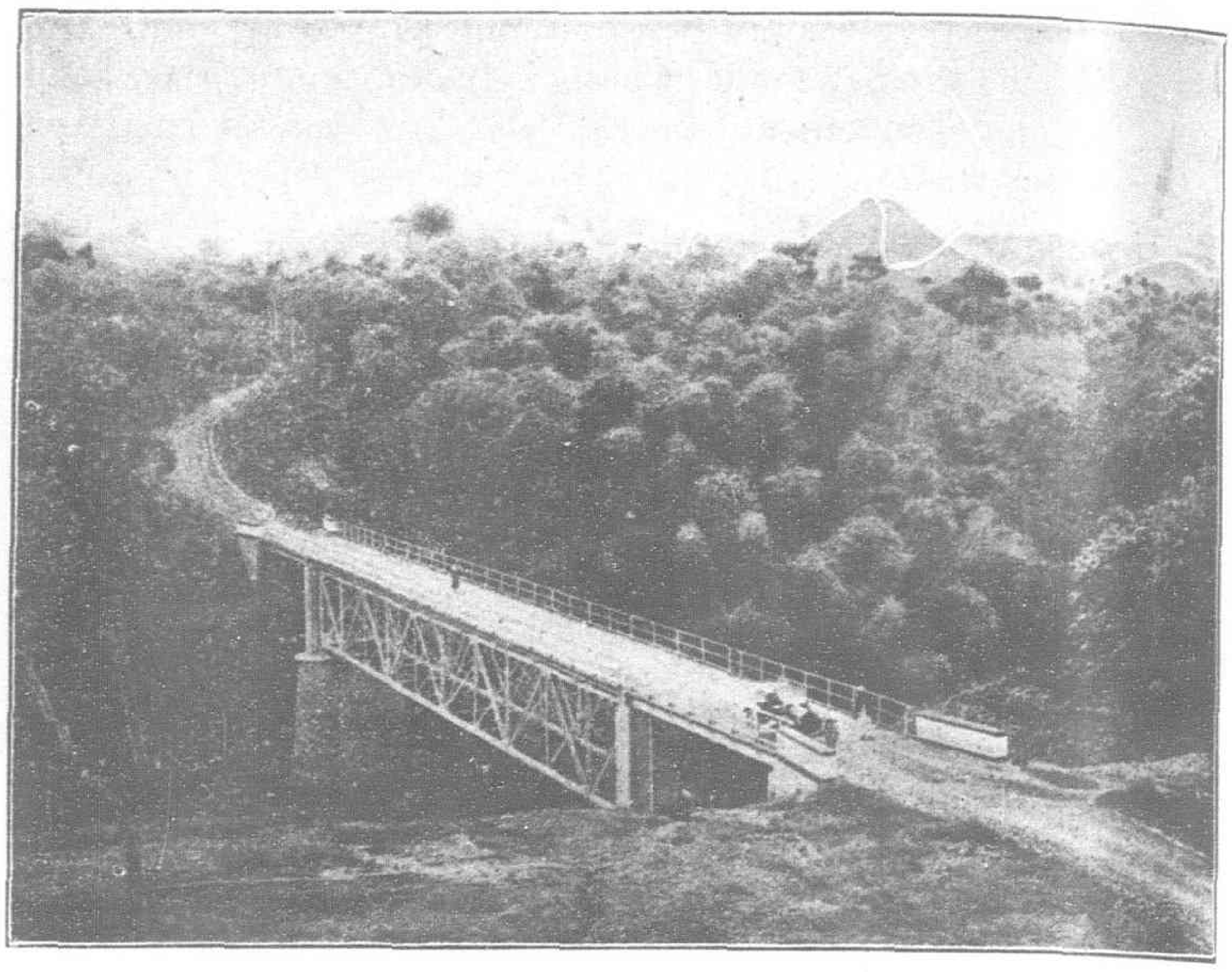
## South Manchurian Railway Expenditure

The acting British consul at Dairen states that the total estimated expenditure of the South Manchuria Railway Company for the financial year 1921-22 amounts to Y. 55,960,827, made up as follows:

| | Yen. |
|---|---|
| Railway | 13,920,288 |
| Vessels | 1,180,498 |
| Harbor works | 4,763,794 |
| Mining | 11,004,446 |
| Industries | 1,333,142 |
| Iron works | 1,554,227 |
| Electricity | 2,485,961 |
| Gas | 1,225,172 |
| Hotels | 145,844 |
| Local administration and building | 3,322,155 |
| Lands | 4,602,958 |
| Buildings | 6,422,342 |
| Total | 51,960,827 |
| Reserve | 4,000,000 |



Road Over the Poentjak Pass



A Road in the Preanger Regencies

# Communications in the N. E. I.

## Roads, Railways, Tramways and Autobus Service

ROADS AND BRIDGES.—In Java is found a network of good and well kept roads.

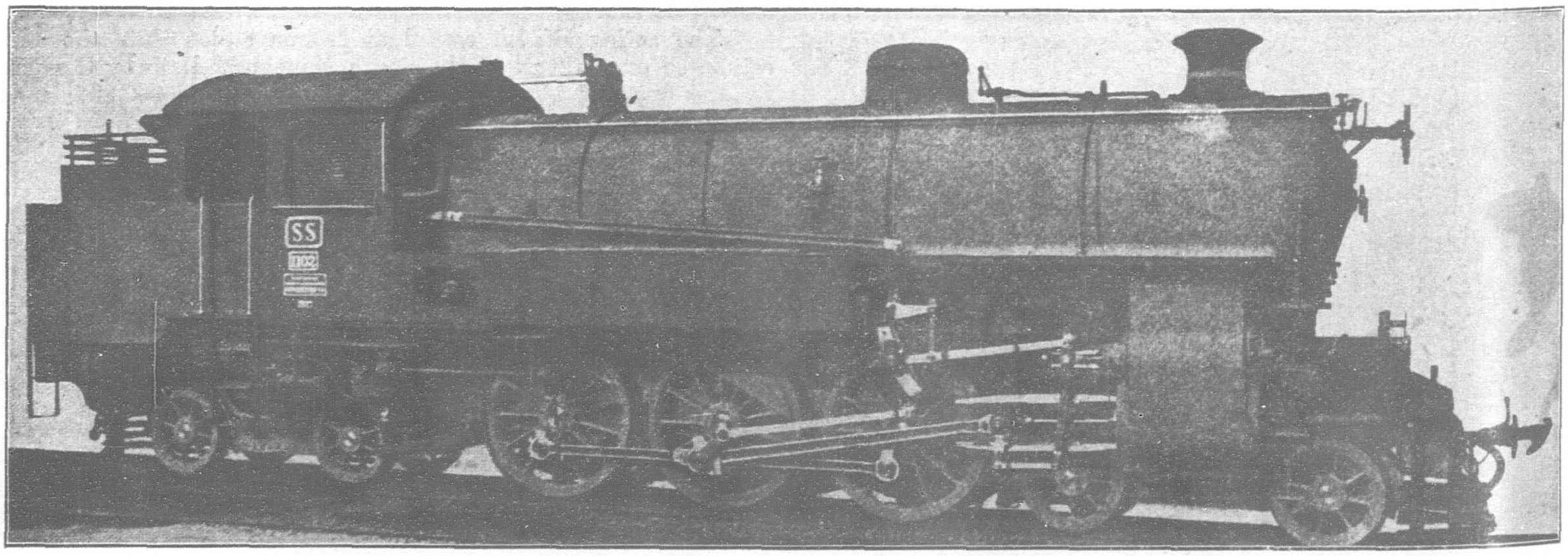
Besides the considerable amount of transport on the railroads the traffic on roads is very heavy in this rapidly developing island. Especially since the introducing of automobiles it has been continuously increasing. Improvement and extension of the present system of roads, according to the requirements of this ever-increasing transport, is a matter to which constant care is devoted by the authorities. The construction and upkeep of municipal roads was formerly entirely in the hands of the central government, but, since the decentralization of administration has been introduced, their improvement is under local management, and the carrying out of provincial road plans is more and more being entrusted to the provincial councils. It is planned in 1927 to let the provincial councils have entire charge of the plans for provincial roads.

In the meantime, however, the central government controls the carrying out of the so-called general road plan for Java. This plan includes the construction and improvement of the two main roads through the entire length of Java (the northern and the southern main road) with five cross branches. The costs are estimated at a total of *f*. 5,637.000, of which about half has already been spent on the work.

The provincial road plans fit in with this general scheme. To carry out the plans for these roads, which are supposed to be completed in ten years, and which according to a preliminary estimate will call for an expenditure of 24 million guilders, the sum of *f*. 985,-000 had been spent by the end of 1918.

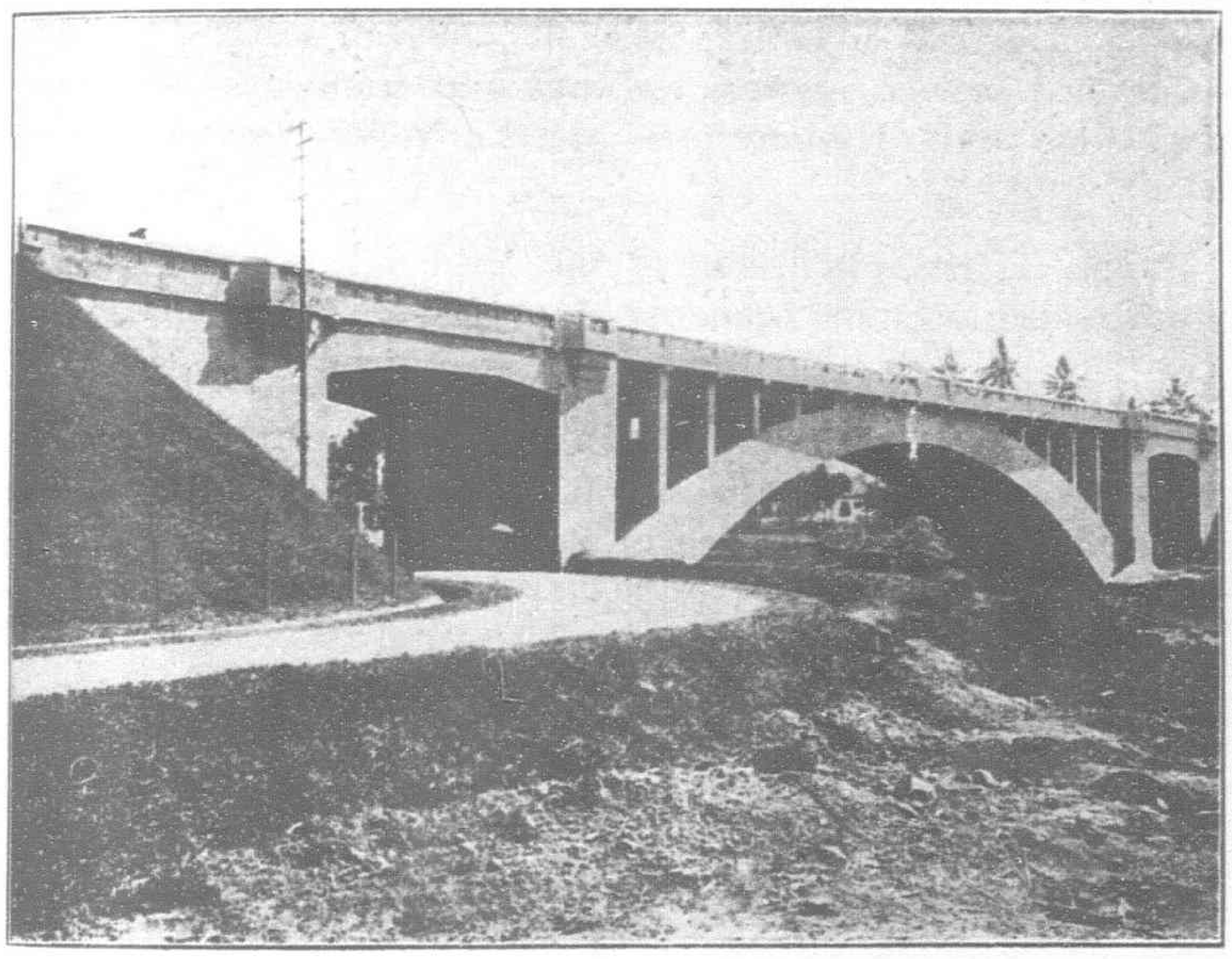
*The road system in the outlying possessions,* from the nature of things, has not by any means attained the same extent as that in Java. Formerly construction in these parts was exclusively in the hands of the civil service officials, who carried out the work chiefly by the aid of statute labor and as a rule had not very many technical appliances at their disposal. The result was that local and provincial roads and systems were constructed, but little attention was paid to any communication between one province and another.

After the institution of a service for the inspection of roads in the outlying possessions in 1908, however, the possibility was opened there, also, to obtain a more vigorous and systematic con-

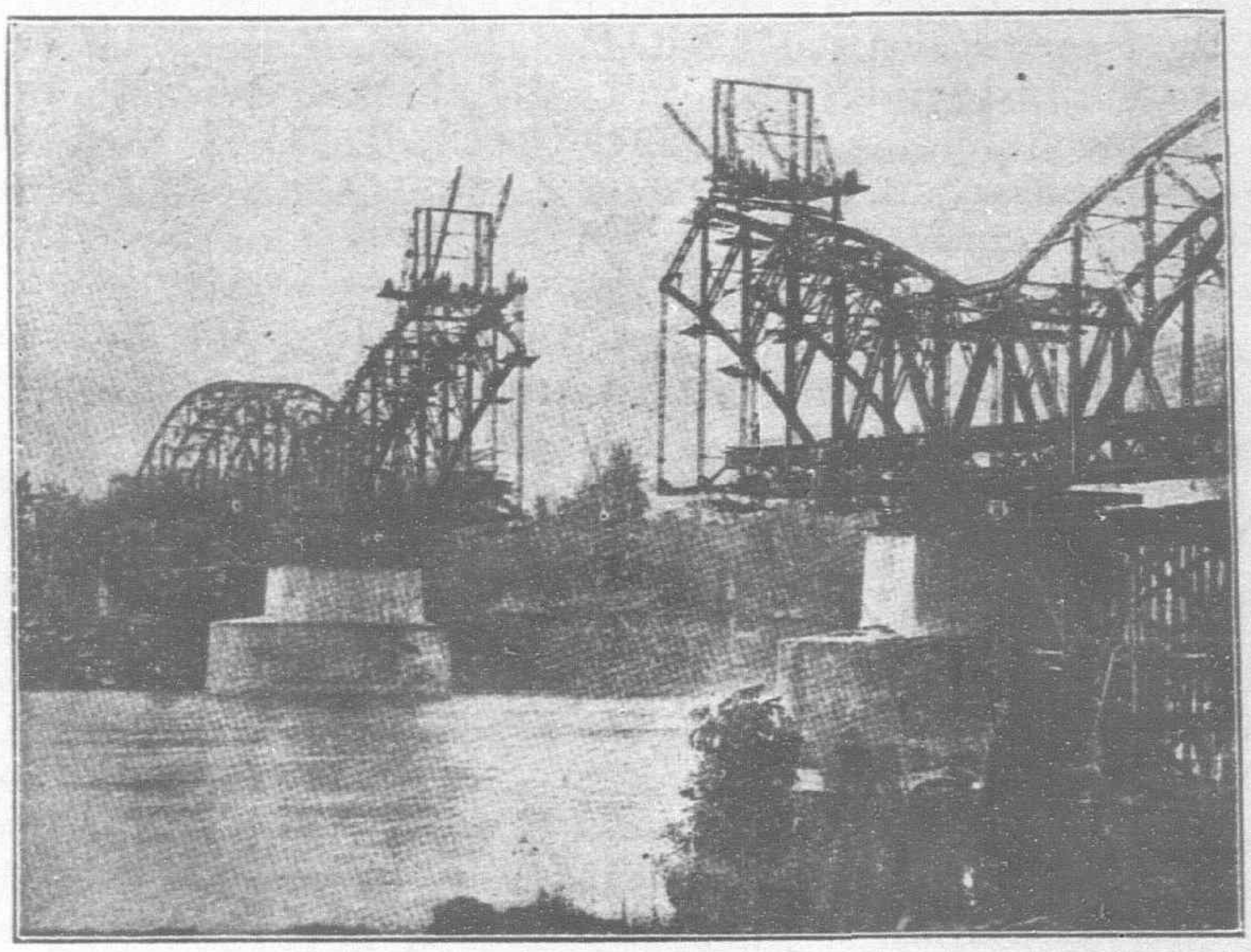


Passenger Locomotive of the Java State Railways struction. At present this construction is being carried on more intensively in Sumatra than elsewhere. The general road plan adopted for this island and the connections proposed in the course of the last few years as a supplement to this plan, contain together a number of 54 roads, with a total length of 4,600 K.M., the construction costs of which are estimated at ± 63 million guilders. At the end of 1918, nine roads were completed and 17 were in course of construction, while at that time an amount of ± *f.* 15,630,000 had already been spent. The object of these roads is not only to establish a connection between those already existing, but also to give access to remote districts which have either been sufficiently developed to warrant the construction of a road or where more intensive cultivation may be expected when a better means of communication has been opened up.

Besides the connections already existing between Padang-Medan and Bankoolen-Palembang other transversal main roads will be constructed which will connect with roads running north and south. These will be made suitable for automobile traffic and will connect, wherever possible, with railroads and navigable rivers. Efforts are also being made to improve the means of communication by rendering the rivers more navigable. This work was also formerly entrusted to civil service officials, but now a number of these improvements are under the supervision of experts. In other parts of the outlying possessions, also, the authorities are paying more attention to the construction of roads. In Borneo where, up to the present time, the rivers have been almost exclusively the means of communication with the interior, two separate road plans are now in course of preparation, i.e., for the province south-east division of Borneo. For North Celebes (Minahassa) a plan has been made, which is already being carried out, and which aims to improve thoroughly the connections now existing to a total length of ± 500 K.M. The costs of this plan are estimated at ± 5 million guilders, of which at the end of 1918 ± *f.* 480,000 had already been spent. Among other roads in South Celebes, one is being constructed ± 126 K.M. in length, between Maros and Watampone, while the main road running along the coast is being gradually adapted for continuous speed traffic.



Concrete Railroad Bridge over the Tjiliwoeng



Railroad Bridge over the Serojoe River in Course of Construction

In the island of Bali may be mentioned the two main roads running from north to south between Singaradja and Denpasser, the construction and improvement of which have already been partly taken in hand. In the other islands, also, which have not been mentioned, new roads are constantly being constructed and the old ones improved. Besides what is being done under government control and at its expense, important work for the improvement of traffic is being carried on by various self-governing communities in the outlying possessions, some with financial support from the government. Among such works are, for instance, the Central Timor road, ± 280 K.M. in length, running from Timor Koepang to Atapoepoe on the island of Timor, and the road construction in the self-governing communities of South Celebes, Sumbawa, Sumba and Flores. Following is a review of the amounts which have been spent in the last few years for extraordinary upkeep and renewal as well as construction by the government of the Dutch East-Indies.

*Construction and Renewal of Roads and Bridges.*

| | Java and Madura | Outlying Possessions | Total |
|---|---|---|---|
| 1914 ... ... ... | *f.* 1,147,054 | *f.* 3,861,199 | *f.* 5,008,253 |
| 1915 ... ... ... | ,, 1,093,143 | ,, 3,163,665 | ,, 4,256,798 |
| 1916 ... ... ... | ,, 1,402,234 | ,, 3,542,962 | ,, 4,945,196 |
| 1917 ... ... ... | ,, 1,938,014 | ,, 3,843,346 | ,, 5,781,360 |
| 1918 ... ... ... | ,, 1,738,587 | ,, 3,889,580 | ,, 5,628,167 |

RAILWAYS AND TRAMS. AUTOMOBILE SERVICES.—The management of the government railways and trams, as well as the handling of all affairs concerning the railways and trams in general, belong to the sphere of activity of the department of government enterprises.

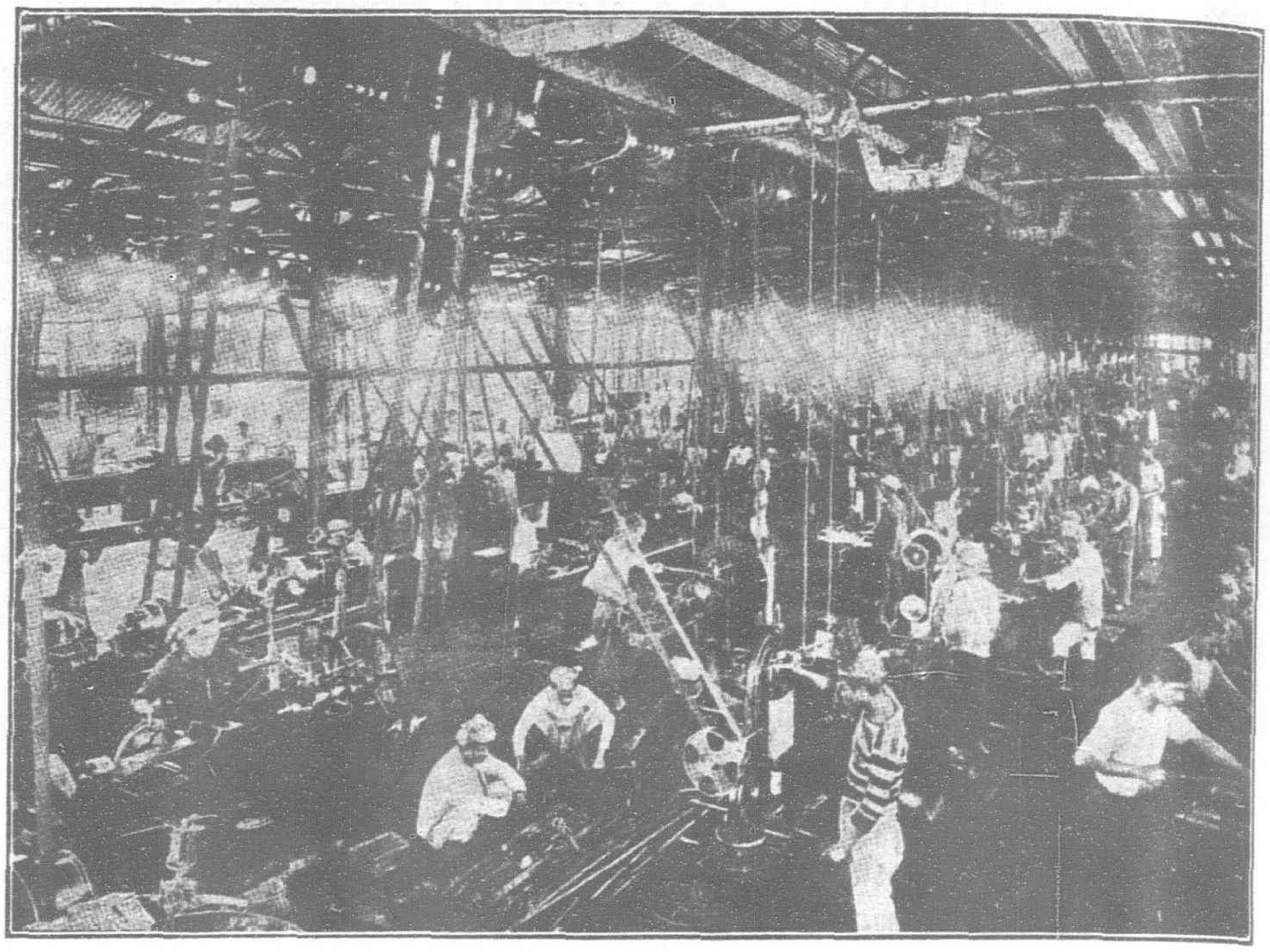
To handle these affairs the department has at its disposal the main offices of two separate services, i.e., (1) the service of railway and tram supervision and (2) the service of state railways and trams.

The first named service includes: (*a*) the general and daily supervision of the construction and the exploiting of all general traffic rail- and tramways, which are not being constructed or exploited by the state; (*b*) daily supervision to see that all prescriptions and regulations ordained by the authorities and all conditions of concessions are fulfilled, the control of the practising of tariffs and conditions of transportation and of the service of the rail and tramways indicated under sub (*a*) and (*c*) the general supervision of the state rail and tramways.

For the supervision mentioned under sub (*a*), (*b*) and (*c*) three inspection divisions are established: the division West and Central Java, the division East Java and Madura and the division outlying possessions. At the head of each division is a chief engineer.

At the head of the entire service of supervision is a superior official with the title: Chief Inspector of Railroads and Tramways. The service mentioned under sub 2 includes: the general management of the surveying, construction, equipment and running of the state railways and trams. The management of the service is by a board of directors, consisting of three persons at the most. If the management is given to one person, he has the title of chief of the service.

I. STATE RAILWAYS AND TRAMWAYS.—The first railway which was constructed by the state, ran from Sourabaya to Pasoeroean and Malang. The section Sourabaya-Pasoeroean, 63 K.M. long, was the first to be exploited and was opened to public traffic on May 16th, 1878. Since that date the net of state railways has been steadily increased and at the end of 1919 the following total was in exploitation:—In Java: 2,509 K.M. of standard gauge lines with a gauge of 1,067 M. and 104 K.M. of narrow gauge lines with a gauge of 0.60 M. In Sumatra: on Sumatra's West Coast 245 K.M. of standard gauge lines with a gauge as above. In South Sumatra 242 K.M. of standard gauge with a gauge as above. In Acheen and dependencies 512 K.M. of narrow gauge lines with a gauge of 0.75 M. Especially since 1906 the state railway industry has developed considerably, as clearly shown by the following figures, in which are not included those concerning the exploitation in South Sumatra and in Acheen.



Workshops of the Java State Railways

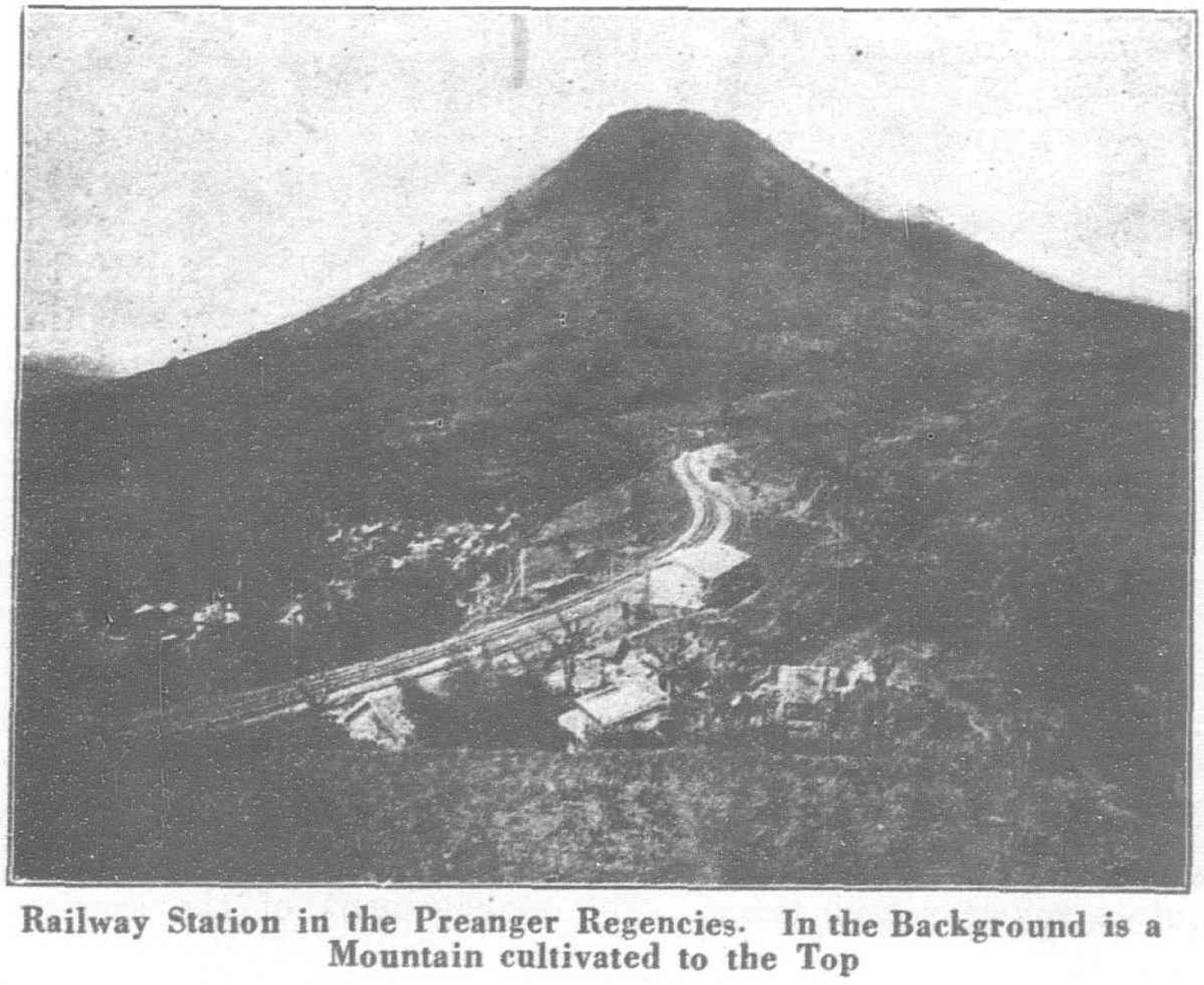
| | 1906 | 1914 | 1917 |
|---|---|---|---|
| Cost of construction | *f.* 178,386,442 | *f.* 234,495,886 | *f.* 275,134,866 |
| K. M. exploited (average) | 2,119 | 2,557 | 2,836 |
| Gross revenues | ,, 16,506,198 | ,, 34,714,830 | ,, 44,019,653 |
| Working expenses (including renovation, repair of extraordinary damage and written off capital) | ,, 9,745,895 | ,, 19,543,195 | ,, 23,478,923 |
| Net receipts | ,, 6,760,303 | ,, 15,171,635 | ,, 20,540,730 |
| Staff European | 1,480 | 2,535 | 3,302 |
| Staff Native | * | 18,509 | 21,629 |
| Passengers—K.M. | 512,090,589 | 1,105,765,121 | 1,455,775,018 |
| Tons—K.M. | 231,611.813 | 489,850,374 | 642,291,224 |
| Number of engines | 424 | 513 | 530 |
| ,, ,, carriages | 975 | 1,589 | 1,714 |
| ,, ,, wagons | 5,858 | 10,094 | 11,038 |

* Not completely known.

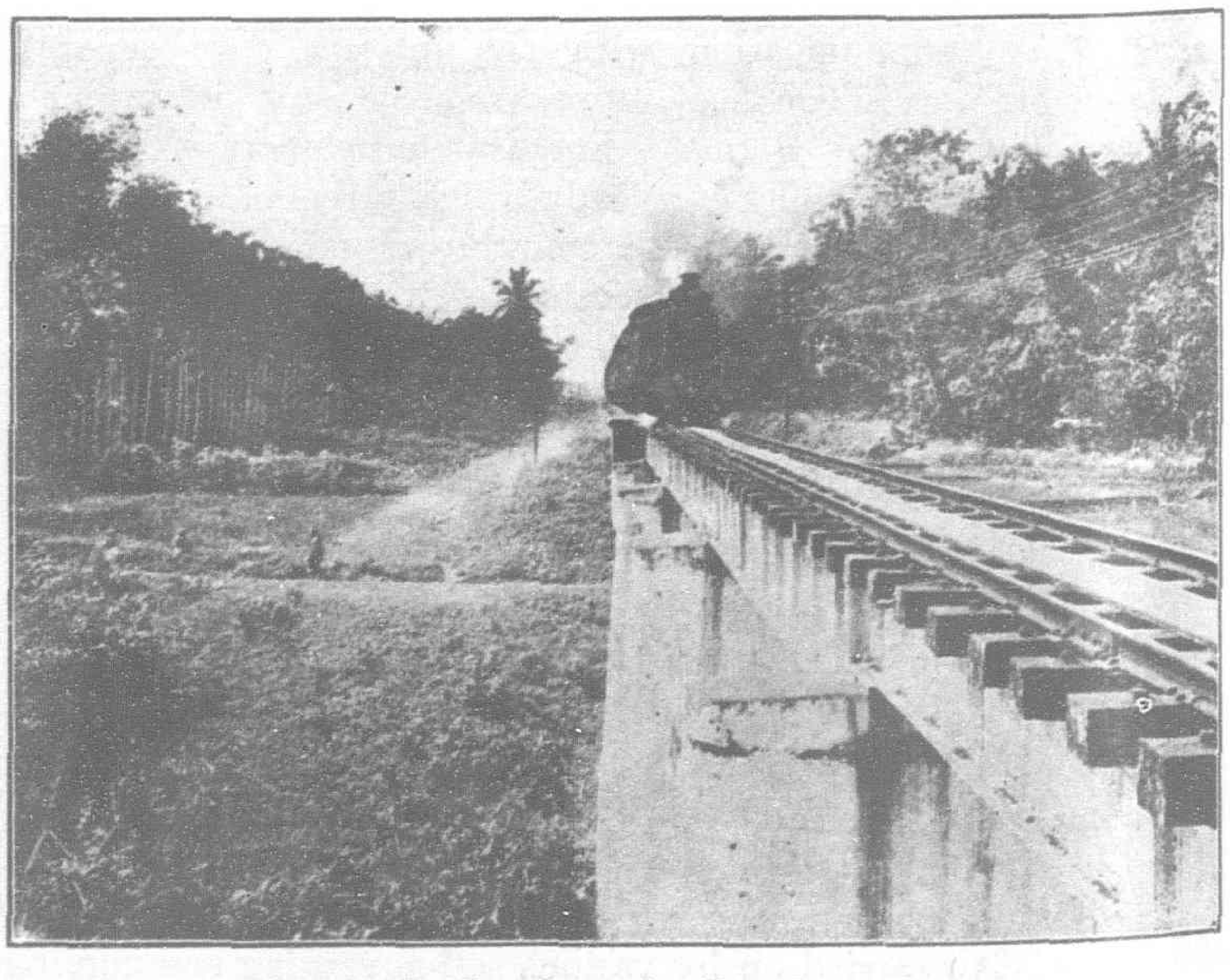
The extraordinary way in which these railways have flourished is largely due to the change in the management of the state railways and trams which was effected in 1906. In that year the management was given to a special branch of service, the above-mentioned service of state railways and tramways, which made it possible to run the enterprise in a more effective and systematic way.

The activities in behalf of the state railways and trams are now divided into nine branches of service, i.e.:

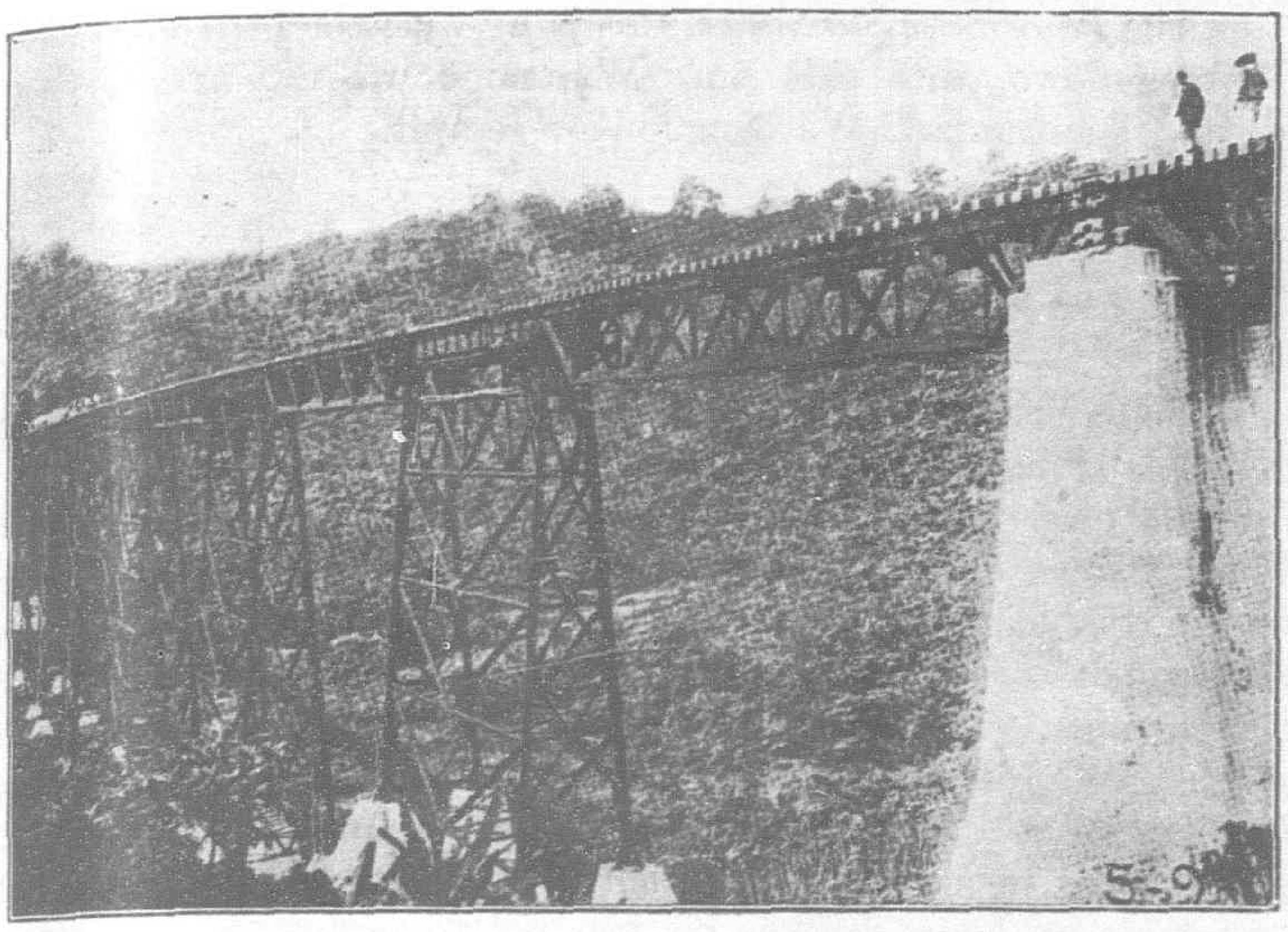
(1) the administrative service, (2) the service of roads and works, (3) the service of traction; simple lines, (4) the service of traffic and business affairs, (5) the service of tramways and automobiles, (6) the service of surveying, (7) the service of construction, (8) the service of construction and bridge building, (9) the service of extension and architectural affairs, while a technical bureau of supplies is also a part of the industry. It is the task of the service of construction and bridge building to see that all technical structures which are built fulfill the latest requirements, that they are controlled according to the latest methods of calculation, and that they are only built from materials which have proved their good quality. This service must also judge the various types of engines by which traffic may take place (in simple as well as in double traction) on certain construction works. The three



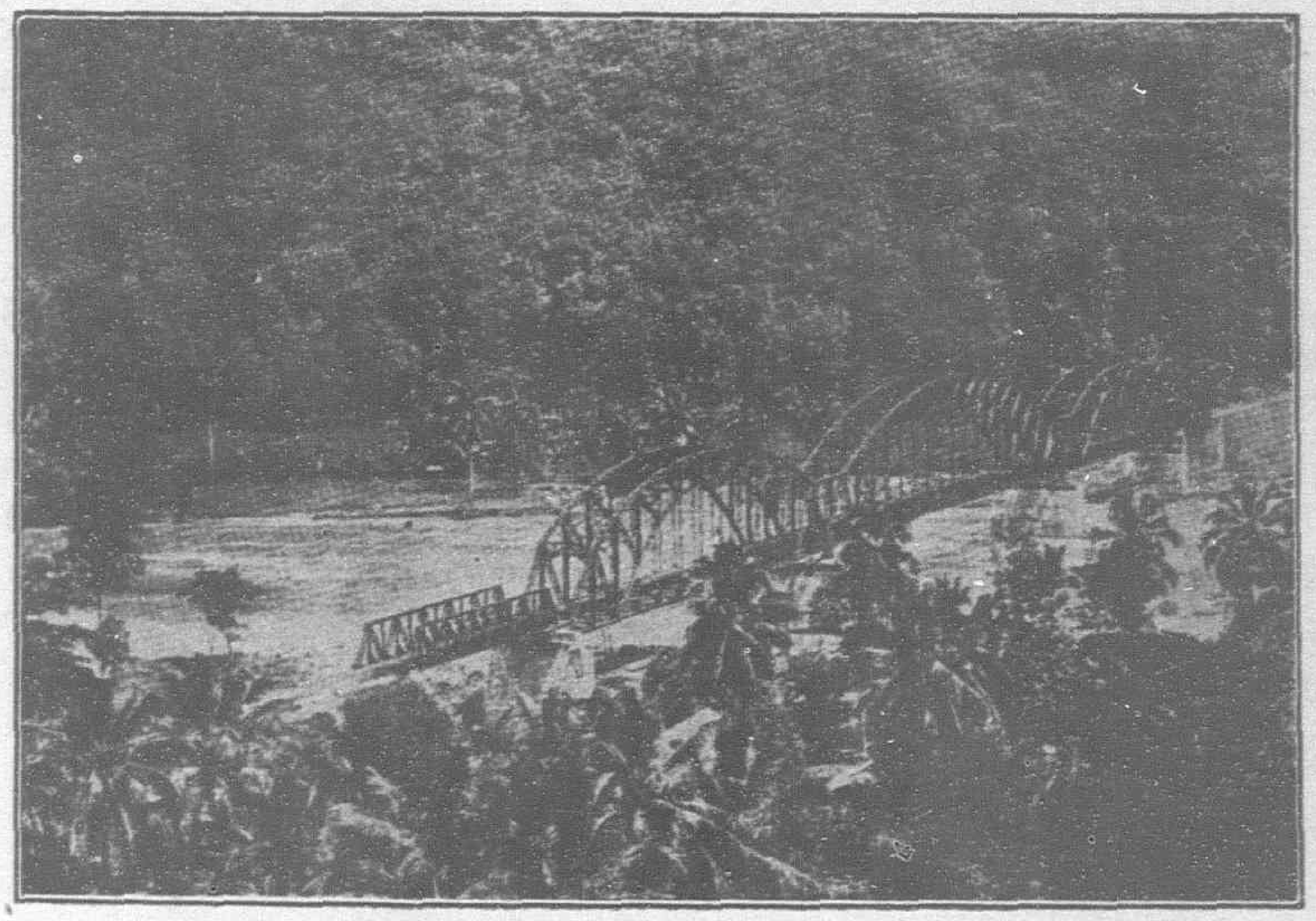
Railway Station in the Preanger Regencies. In the Background is a Mountain cultivated to the Top



Bridge Over the Tjigobang



Viaduct Over the Ravine of the Tjipamottan River



Railway Bridge Over the Serajoe River

main parts into which the activities of the state railways and trams may be divided are: (1) surveying and other preliminary work; (2) construction; (3) exploitation.

Tables next give an idea of the exploitation of the state railways and trams during the years 1910 up to and including 1918.

### STANDARD-GAUGE TRACK IN JAVA

| | Number of K.M. exploited | Number of Passengers carried | Tons of goods transported | Cost of construction in guilders | Gross receipts in guilders | Working expenses in guilders | Net revenues in guilders |
|---|---|---|---|---|---|---|---|
| 1910 | 1,968 | 26,067,100 | 3,080,894 | 166,507,513 | 21,421,617 | 11,314,977 | 10,106,640 |
| 1911 | 1,981 | 29,811,460 | 3,194,103 | 169,932,205 | 24,147,912 | 11,897,903 | 12,250,009 |
| 1912 | 2,172 | 34,031,671 | 3,886,912 | 185,029,768 | 27.155,299 | 13,870,342 | 13,284,957 |
| 1913 | 2,228 | 38,747,080 | 4,167,640 | 200,665,149 | 29,860,672 | 15,347,573 | 14,513,099 |
| 1914 | 2,229 | 39,212.177 | 4,169,015 | 209,361,662 | 31,914,555 | 17,869,600 | 14,044,955 |
| 1915 | 2,238 | 39,314,692 | 4,727,717 | 214,448,660 | 33,357,470 | 17,325,192 | 16,032,278 |
| 1916 | 2,303 | 44,041,817 | 1,575,610 | 220,919,094 | 37,453,841 | 18,522,451 | 18,941,390 |
| 1917 | 2,108 | 10,116,426 | 1,943,372 | 247,738,426 | 40,982,248 | 21,663,913 | 19,318,335 |
| 1918 | 2,108 | 49,920,434 | 6,128,682 | 254,018,234 | 43,641,656 | 27,745,886 | 15,068,212 |

### NARROW-GAUGE TRACKS IN JAVA

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1910 | 27 | 371,920 | 24,414 | 250,293 | 64,959 | 28,172 | 36,787 |
| 1911 | 27 | 479,095 | 15,798 | 265,309 | 72,674 | 30,438 | 42,236 |
| 1912 | 43 | 538,548 | 20,274 | 482,268 | 85,710 | 42,195 | 43,515 |
| 1913 | 83 | 957,158 | 50,780 | 1,113,925 | 193,989 | 100,547 | 93,442 |
| 1914 | 83 | 1,117,270 | 57,318 | 1,264,464 | 235,330 | 119,027 | 116,303 |
| 1915 | 83 | 1,378,280 | 73,553 | 1,373,852 | 283,727 | 142,033 | 141,694 |
| 1916 | 83 | 1,460,837 | 87,660 | 1,431,002 | 317,831 | 142,505 | 175,326 |
| 1917 | 83 | 1,588,086 | 110.535 | 1,497,081 | 351,758 | 147,096 | 204,662 |
| 1918 | 83 | 1,569,116 | 101,789 | 1,506,997 | 331,366 | 195,536 | 119,281 |

### RAILWAYS ON THE WEST COAST OF SUMATRA

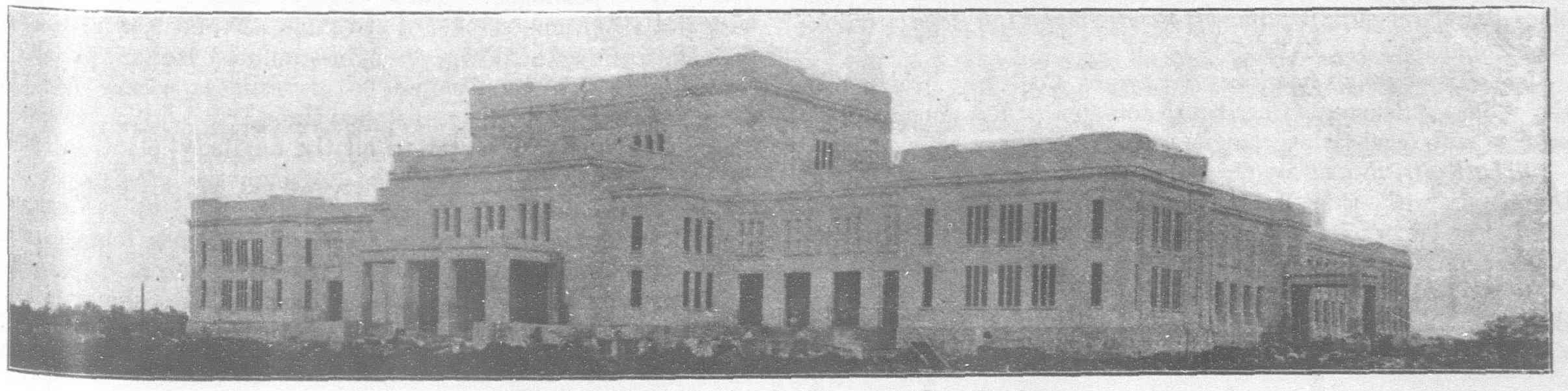
| | Number of K.M. exploited | Number of passengers carried | Tons of goods transported | Cost of construction in guilders (cost of harbour and coal sheds not included) | Gross receipts in guilders | Working expenses in guilders | Net revenues in guilders |
|---|---|---|---|---|---|---|---|
| 1910 | 245 | 1,035,736 | 496,611 | 22,731,572 | 1,846,089 | 1,219,367 | 626.722 |
| 1911 | 245 | 1,697,580 | 512,643 | 22,985,715 | 1,967,164 | 1,421.171 | 545,993 |
| 1912 | 245 | 2,180,023 | 537,763 | 23,298,778 | 2,215,810 | 1,547,273 | 668,537 |
| 1913 | 245 | 2,700,838 | 585,309 | 23,733,684 | 2,386,555 | 1,527,101 | 859.454 |
| 1914 | 245 | 3,001,079 | 639,694 | 23,869,760 | 2,564,945 | 1,548,566 | 1,016,379 |
| 1915 | 245 | 2,880,986 | 660,344 | 24,028,558 | 2,649,298 | 1,477,867 | 1,171,431 |
| 1916 | 245 | 3,083,828 | 708,839 | 24,386,355 | 2,826,297 | 1,626,933 | 1,199.364 |
| 1917 | 245 | 3,324,870 | 701,076 | 24,498,309 | 2,685,647 | 1,667,915 | 1,016,732 |
| 1918 | 245 | 3,487,266 | 710,135 | 25,654,012 | 3,412,489 | 1,991,250 | 1,358,608 |

As seen from the above review the gross receipts of the Java railways increased not inconsiderably in 1914. On the other hand, however, the costs of exploitation increased quite considerably. This was in connection with the increase in transportation and extension of staff and the rise in coal prices. In the following war years, also, the gross receipts increased considerably, but especially since 1917 the exploitation costs have risen so enormously that the profits and loss account diminished to a great extent. In general the increasing traffic requirements could be satisfied. Only on the railroads in and around Batavia were special difficulties encountered; to overcome them expensive works are being planned and carried out.

II. PRIVATE RAILROADS AND TRAMWAYS.—The first railroad established by private initiative is the line Semarang-Principalities, Willem I, running from Semarang via Surakarta to Djokja with a side branch from Kedoengdjati to Willem I. The concession for the construction of this railway, granted in 1862 to W. Poolman, C.S., was later transferred to the joint stock company the "*Netherlands Indian Railroad Company*" (*Nederlandsch-Indische Spoorwegmaatschappij*), the establishing of which was sanctioned by royal decree of September 17th, 1863, No. 37.

The railroad was completed May 21st, 1873.

The Netherlands Indian Railroad Company obtained a concession in 1864 for the construction of a railroad between Batavia and Buitenzorg. This line, which was completed January 31st, 1873, was purchased by the Dutch East Indian government, and changed hands November 1st, 1913. Furthermore the Company extended the net of iron roads by the construction (so far as the line under sub (*d*) is concerned by purchase of the following steamtrams:—(*a*) Djokja-Brossot-Sewoegaloer, with side branch Ngabean-Poendoeng; (*b*) Djokja-Magelang-Willem I, with side branch Setjang-Parakan; (*c*) Goendih-Sourabaya, with side branches Soemari-Grissee-Kandangan, Bodjonegoro-Djatirogo and Babat-Toeban-Djenoe. (*d*) Solo-Bojolali; (*e*) Solo-Wonogiri-Kakap. In 1918 it opened automobile services from Bringin and Toentang to Salatiga, also from Parakan to Wonosobo and Ngadiredjo.



Tandjung-Pirok Station in Course of Construction

Table next gives some data regarding the results of the working of the railway Semarang—Principalities in the period between 1914 and 1918.

| | No. K.M. in use | No. of passengers | Goods carried (in tons) | Cost of construction in guilders | Gross revenue in guilders | Net revenue in guilders | Working expenses |
|---|---|---|---|---|---|---|---|
| 1914 | 206 | 3,351,706 | 808,944 | 34,428,829 | 5,162,100 | 2,249,142 | 2,912,958 |
| 1915 | 210 | 3,264,097 | 840,165 | 35,323,810 | 5,065,498 | 2,194,849 | 2,870,649 |
| 1916 | 210 | 3,648,621 | 957,343 | 36,351,240 | 5,752,526 | 2,988,401 | 2,764,125 |
| 1917 | 210 | 4,140,088 | 921,625 | 36,661,310 | 5,451,392 | 2,349,731 | 3,101,661 |
| 1918 | 210 | 4,099,071 | 1,072,115 | 36,753,332 | 6,264,857 | 3,014,627 | 3,250,230 |

In the district of Deli (East Coast of Sumatra) a third railroad was constructed by private enterprise. In 1883 a concession was granted to the Deli Company (Deli Maatschappij) for the construction and exploitation of a railway, running from the anchorage on the Belawan River via Medan to Deli-Toewa with a side line to Timbanglangkat. This concession was transferred to the *Deli Railway Company* (*Deli Spoorweg Maatschappij*), established at Amsterdam. The first part, 17 K.M. in length, was opened to traffic July 25th, 1886, while the line was further completed and opened up in 1887 and 1888. Since then this Company was granted various concessions for the construction of further lines, partly railways, partly tramways. In the method of construction and exploitation, however, there is no appreciable difference between the railways and trams, while in the latest revisions of concessions some tramways were renamed as railroads and vice versa. The Company is at present exploiting the following railways :—Belawan-Medan, Medan Timbang-Langkat, Medan-Perbaoengan, Perbaoengan-Tebing Tinggi-Tandjong Balei-Telok Niboeng and Tebing Tinggi-Pematang Siantar, and the following tramways :—Medan-Deli Toewa-Batoe, Kampong Baroe-Arnhemia, Loeboek Pakam-Bangoen Poerba, Timbang Langkat-Kwala, Timang Langkat-Pangkalan Brandan and Pangkalan Brandan-Besitang.

Table next gives some data regarding the working of these railroads and tramways over the period 1914—1918.

| | No. K.M. in use | No. of passengers | Quantity of goods carried (in tons) | Cost of construction in guilders | Gross revenue in guilders | Net revenue in guilders | Working expenses |
|---|---|---|---|---|---|---|---|
| 1914 | 263 | 3,079,482 | 587,816 | 22,697,829 | 3,300,017 | 1,598,258 | 1,701,759 |
| 1915 | 361 | 3,064,627 | 800,455 | 25,680,188 | 3,433,636 | 1,754,708 | 1,678,928 |
| 1916 | 410 | 3,930,221 | 964,350 | 27,678,081 | 4,513,424 | 2,509,279 | 2,004,145 |
| 1917 | 410 | 4,573,450 | 918,515 | 30,285,429 | 5,079,356 | 2,805,866 | 2,273,490 |
| 1918 | 414 | 4,529,174 | 893,638 | 33,295,158 | 5,606,495 | 2,874,824 | 2,731,671 |

Since January 1st, 1916 the Company has run an auto-omnibus service from Medan to Kaban Djahe.

The tramway net established with private capital, extended considerably in the course of the years and at the end of 1918 reached a total length of about 2200 K.M. To the principal private tramway companies belong :

The *Semarang—Joana Steamtram Company*, which runs the following lines :—Semarang - Joana - Lassem - Pamotan - Ngandang-Djatirogo with side lines Demak-Blora, Koedoes-Petjagaan (with side line Majong-Welahan), Joana-Tajoe, Rembang-Tjepoe, Poerwadadi-Goendih and Wirosari-Kradenan.

The *East Java Steamtram Company*, which runs the lines Sourabaya-Sepandjang-Krian, Wonokromo-Koepang-Pasar-Toeri-Stadstuin-harbor and Modjokerto-Ngoro with the side line Soemengko-Dinojo.

The *Serajoedal Steamtram Company*, which runs the lines Maos-Bandjarnegara, Bandjarsari-Poerbolinggo and Bandjarnegara-Wonosobo.

The *Semarang—Cheribon Steamtram Company*, which runs the lines Semarang-Cheribon-Kadipaten, Pekalongan-Wonopringgo and Tegal-Balapoelang-Margasari.

The *Kediri Steamtram Company*, which runs the lines Kediri-Djombang with side lines Pesantren-Wates, Goerah-Kawarassan-Palem-Paper, Paree-Kepoeng, Paree-Knoto and Poeloredjo-Kandangan.

The *Malang Steamtram Company*, with the lines Singosari-Blimbing-Malang-Gedonglegi-Dampit with side lines Gedonglegi-Senggoro-Kepandjen, Blimbing-Toempang and Sedajoe-Toeren.

The *Pasoeroean Steamtram Company* with the lines Pasoeroean-Waroengdowo, with side lines Waroengdowo-Alkmaar, Waroengdowo-Winongan and Waroengdowo-Ngempit.

## China and Cotton Goods

Under the heading of "Watch China" a contributor to *Barron's Financial Weekly*, a new American publication, says: "China used to be England's greatest market for cotton goods. China is now dotted over with the most up-to-date cotton mills, and is producing cotton fabrics equal to the best and sufficient to supply not only China but other former customers of European cotton mills. The cotton goods made in China cost less than 25 per cent. of those manufactured in Manchester or Fall River. What is stranger still they are even superior in quality. The careful, painstaking, docile Chinese worker, who is satisfied with a wage of two cents an hour, finishes his product to perfection. Seventeen great cotton mills were built in China last year, and ere long Chinese cotton goods will flood the markets of the world. That is the portentous industrial transformation taking place in China. There are warehouses in every seaport of China stocked to capacity with cotton goods made in England for the Chinese markets. How many tens of millions of English capital are frozen up in these goods I cannot tell, but they can never be sold for 20 per cent. of their cost. Either banks or merchants, or manufacturers, must take a loss of 80 per cent., for China will soon be invading the South American and European markets with her amazingly cheap but fine silk and cotton fabrics."

Doubt is expressed in Manchester whether the American writer is fully qualified to state that China is producing cotton goods that are superior to those manufactured in Lancashire, for during the past week shippers to China have purchased fair-sized lots of shirtings of well-known make, and, would they have done this if they could have procured a better and cheaper line in Shanghai?

## 13,000-Ton Motor Ship "Malaya" for China Trade

Designed for the Far Eastern trade, the motor ship *Malaya*, which was launched some time ago, is now approaching completion, and will shortly be put into commission for the owners, the East Asiatic Co. She is of the same size as the *Afrika*, of which a description was given in *The Motor Ship* for May, 1920. These two vessels are the largest motor ships yet built in Denmark.

The *Malaya* is 445-ft. in length, with a beam of 60-ft., a moulded breadth of 42-ft. and a d.w.c. of 13,000 tons with a draft of 28-ft.

The plans have very minor modifications from those of the *Afrika*. The latter has proved an extremely satisfactory ship, and on her maiden voyage, totaling about 35,000 miles, had a daily fuel consumption averaging 14.16 tons with an average net cargo of 11,750 tons. The average speed for the whole voyage was over 11 knots.

Two six-cylinder engines, each of 2,250 i.h.p., are being installed in the *Malaya*, which has been built by Burmeister and Wain, of Copenhagen. These engines have cylinders 740 mm. bore and 1,150 mm. stroke, of the same size and type as those in the eight-cylinder 3,200 i.h.p. engines built by Harland and Wolff for the large Glen motor ships.

In the engine-room are installed three Diesel-driven generators of 65 kw., supplying power to all the auxiliary plant, including 20 electric winches. Like the *Afrika*, the *Malaya* is not provided with a funnel, the exhaust being taken up two exhaust pipes alongside one of the masts. The crew comprises four engineers and eight assistants, in addition to the chief engineer.

The double bottom is arranged to carry oil or water ballast, whilst additional oil-tank capacity is provided in the tunnel space. Accommodation is, as usual, arranged for about one dozen passengers.

# Mining in Siam

AMONG the mineral resources of Siam may be mentioned rubies, sapphires, gold, tin, copper, coal, iron, zinc, lead, wolfram, antimony and molybdenum. Of these the only ones worked on a commercial scale are tin and wolfram, tin being by far the more important. The following table shows the output of the country for the last five years :—

TIN OUTPUT IN PICULS.

| Monthon. | Year 126 | Year 127 | Year 128 | Year 129 | Year 130 |
|---|---|---|---|---|---|
| Puket... ... ... | 64,285 | 64,157 | 67,882 | 70,719 | 87,354 |
| Patani ... ... | 4,826 | 11,851 | 6,515† | 6,207 | 8,083 |
| Chumpawn ... ... | 908 | 1,411 | 2,044 | 2,782 | 2,911 |
| Nakon Sri Tammarat | 2,419 | 2,768 | 2,842 | 2,547 | 1,279 |
| Total ... ... | 72,438 | 80,187 | 79,283 | 82,255 | 99,627 |

| Monthon | *Year (2455) 1912-13 | Year (2456) 1913-14 | Year (2457) 1914-15 | Year (2458) 1915-16 | Year (2459) 1916-17 |
|---|---|---|---|---|---|
| Puket... ... ... | 99,901 | 100,297 | 98,390 | 130,994 | 130,739 |
| Patani ... ... | 6,067 | 8,351 | 7,989 | 15,469 | 10,589 |
| Chumpawn ... ... | 3,092 | 2,559 | 2,327 | 2,250 | 2,278 |
| Nakon Sri Tammarat | 1,564 | 2,155 | 2,025 | 2,462 | 3,653 |
| Total ... ... | 110,624 | 113,362 | 110,731 | 151,175 | 147,259 |

| Monthon | Year (2460) 1917-18 | Year (2461) 1918-19 | Year (2462) 1919-20 | Year (2463) 1920-21 | Year (2464) 1921-22 |
|---|---|---|---|---|---|
| Puket... ... ... | 131,999 | 124,399 | 121,271 | | |
| Patani ... ... | 13,520 | 8,560 | 9,106 | | |
| Chumpawn ... ... | 2,364 | 2,620 | 2,900 | | |
| Nakon Sri Tammarat | 5,899 | 12,846 | 6,576 | | |
| Total ... ... | 153,782 | 148,425 | 139,853 | | |

The figures given indicate piculs of metallic tin. In the case of ore being exported it is reckoned to contain 70 per cent. of the metal, this being the rate at which it is calculated for taxation purposes; as a matter of fact the contents are probably slightly in excess of 70 per cent., probably averaging 71 per cent.

As can be seen from the table, Monthon Puket on the West coast of the Malay Peninsula is by far the most important part of the country from a mining point of view. In Monthon Puket the most important province is the island of Puket, which in the year 130 produced 53,811 piculs or about 54 per cent. of the whole of the country. The province of Renong, which in the past turned out but a small quantity of tin annually, is rapidly becoming one of the biggest producers owing to the advent of two large dredging companies.

On the East coast of the Peninsula Patani is the largest producer and the output is increasing in a satisfactory way. Both Chumpawn and Nakon Sri Tammarat are very small producers, though it is hoped that the building of the southern railway through these monthons will help to increase the tin production.

By far the most important event of the last few years has been the introduction of dredges to Siam. In November 1907 the Tongkah Harbor Tin Dredging Co. started to work their first dredge and from that time their output has steadily increased. At the present time they have no less than five dredges at work in the harbor, the two newest and largest excavating about 80,000 cubic yards per month. In December 1911 the Tongkah compound started work with one dredge on their concession which comprises the site of the old government offices and some of the adjoining land. This land has long been known to be very rich and the sum paid for the concession by the company is more than sufficient to build fine new offices; at the same time the company should make a very handsome profit. The two other companies now operating dredges in Siam are the Siamese Tin Syndicate and the Renong Dredging Co., both of whom work in Renong, each operating one dredge at present, while the Siamese Tin Syndicate have two more on order and the Renong Dredging Co. one more, so that within a year's time there should be five dredges at work in Renong. The following table shows the total production from dredges in Siam for the last five years, *i.e.*, since dredging started. For purposes of comparison a second column is given showing the amount of tin obtained from all sources other than dredging:—

| Year | Tin obtained from Dredging Piculs | Other sources Piculs |
|---|---|---|
| 126 | 467 | 71,971 |
| 127 | 2,528 | 77,659 |
| 128 | 7,372 | 71,911 |
| 129 | 11,451 | 70,804 |
| 130 | 23,317 | 76,310 |
| (2455) 1912-13 | 32,946 | 77,678 |
| (2456) 1913-14 | 30,026 | 83,336 |
| (2457) 1914-15 | 29,686 | 81,045 |
| (2458) 1915-16 | 46,829 | 104,346 |
| (2459) 1916-17 | 47,298 | 99,961 |
| (2460) 1917-18 | 51,342 | 102,439 |
| (2461) 1918-19 | 52,124 | 96,301 |
| (2462) 1919-20 | 64,992 | 74,861 |

From the second column it will be seen that the output from sources other than dredging remains almost stationary, in fact the statistics for former years bear this out. The output for the year 130 is certainly higher than the previous four years, it is however not the highest on record; the increase for this year is undoubtedly due to the very high price of tin. It is probable that the year 131 will show a considerable increase both from dredging and other sources, the price of the metal being at present far higher than it has been within the last 30 years, probably the highest it has ever been, and there is no indication of any considerable decrease in the price for the present.

In the course of tin mining in certain districts of Monthon Nakon Sri Tammarat, a black mineral was found mixed with the tin ore and of the same specific gravity so that the separation of this black mineral from the tin became a difficult operation. This mineral was known to the miners as "dead ore" and was looked upon by them as a nuisance. Some of the ore was finally taken to Singapore and it was then found to be wolfram, a mineral of considerable value though less than tin ore. The richest deposit of wolfram that has yet been found is in Amphur Klai in Nakon Sri Tammarat. As soon as the value of the mineral was known a rush took place to obtain leases, and the government decided to survey the land in plots and sell it by public auction. The money obtained from this auction was to be used for road-building purposes to assist the miners. In the year 130 about 3,000 piculs of wolfram were exported from this district and the miners must have made a good profit. At first the profits were enormous as a large quantity of the ore had been separated by the old tin-miners and left in heaps. These heaps have all been worked out and now the miners are gradually getting deeper into the rock and the profits naturally diminish. In fact if capital and knowledge are not available to work the deposit on proper lines the export from this field will soon cease.

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*In 127, the output from Amphur Betong, Lower Rahman, Patani, was 7,180 piculs. In 128, practically the whole of the producing territory was ceded to Great Britain.

†*Note.*—In the year 1912-1913 the Buddhist era was officially adopted in Siam, in the place of dating from the commencement of the present reigning dynasty.

Not far from this district lies the island Koh Samui, where a European company has spent a certain amount on prospecting and installing machinery. They do not appear to have met with great success as they have stopped operations for the present.

Small quantities of wolfram have also been mined in Puket. In fact the mineral appears to be fairly widely distributed in the Siamese portion of the Malay Peninsula.

Gold is won on a small scale, in many parts of the country, the Chinese and Siamese washing it out of the stream beds. In the past European companies with large capital have attempted to work some of the deposits, viz., at Tomoh, Bangtaphan, Wattana and Kabin. In every case the result was failure, though how far this was due to the poorness of the mines and how far to mismanagement it is difficult to determine. Undoubtedly in many cases mismanagement played an important part. On a smaller scale capital has been spent in opening mines at Muang Lomm in Petchaboon, and at Pu Kiriu in Lopburi, with equally bad results. In all the above-mentioned places small amounts of gold are still won by the Siamese and Chinese, but it can hardly be said to constitute a regular industry, as most of the people only work at gold washing in their spare time. At Tomoh, where the alluvial deposits are nearly worked out, a certain amount of rock mining is carried on by the Chinese.

An unsuccessful attempt was made by Danish capitalists some years ago to work a copper mine at Chantuk on the way to Korat, and samples of copper ore are occasionally brought in from different parts of the country to the mines department for identification. Most of these samples have been sulphides but one specimen of native copper was identified.

Since the cession of the Pailin district to the French in 1907 the gem industry has ceased to have any importance. Gems are still found near Korat and in other districts, but the total value is very small indeed.

An enterprise was started to work lead in Jalar many years ago, but nothing came of it. The machinery still lies scattered over the country, never having reached the mine. Lead occurs mixed with tin in some of the Jalar fields and causes considerable trouble to the miners, the lead occuring as carbonate and the tin as oxide, and the two are very difficult to separate owing to their having the same specific gravity. At the present time there is a prospect of a lead mine of considerable size being opened above Karnburi in Monthon Ratburi. An English engineer has examined it and advised further prospecting being done. At present a diamond drill is at work obtaining samples from depth. There is no doubt that a large body of ore exists, but the question at present is whether the quality of the ore is good enough to counterbalance the very high transport charges which will necessarily be entailed.

Coal has been known for many years past to exist in Gherbi, and a certain amount of capital has been spent during the last five or six years in examining the deposit. There is no doubt as to the quantity, but the quality is poor. The deposit is situated on tidal water, and the question of transport provides no difficulties.

Magnetic iron and titaniferous iron are very frequently brought to the mining department. Neither of them is likely to be of any value in the country. They are brought in for identification under the mistaken impression that they are wolfram, which they closely resemble.

The revenue derived from mining varies very much from year to year. By far the greater part of the revenue is obtained from the royalty imposed on all tin exported. This royalty is based on a sliding scale varying with the price of tin. With tin at $60 per picul the royalty only amounts to about 10 ticals per picul, whereas with the present abnormally high price of the metal the royalty has risen to about 26 ticals per picul. It will thus be seen what an important factor the price of tin is in estimating the amount of revenue. Not only is the royalty per picul much higher with the present high price, but the miners are naturally striving their utmost to turn out as much tin as possible. The following table shows the revenue derived from mining during the last thirteen years. For purposes of comparison the average price of tin in Singapore for the years in question is given in the adjoining column :—

| Year | Average price of tin in $ per picul | Revenue. Ticals |
|---|---|---|
| 118 | 60 | 626,046 |
| 119 | 62 | 1,239,204 |
| 120 | 61 | 746,733 |
| 121 | 62 | 1,105,849 |
| 122 | 63 | 1,082,425 |
| 123 | 68 | 1,020,866 |
| 124 | 75 | 1,210,480 |
| 125 | 92 | 1.536,532 |
| 126 | 71 | 1,095,165 |
| 127 | 67 | 826,483 |
| 128 | 71 | 918,968 |
| 129 | 82 | 1,185,823 |
| 130 | 95 | 1,900,000‡ |
| (2455)<br>1912-13 | 107 | 2,416,670 |
| (2456)<br>1913-14 | 95 | 1,871,514 |
| (2457)<br>1914-15 | (a) | 1,137,628 |
| (2458)<br>1915-16 | 88 | 1,839,442 |
| (2459)<br>1916-17 | 89 | 2,126,273 |
| (2460)<br>1917-18 | 122 | 4,277,234 |
| (2461)<br>1918-19 | 147.84 | 6,454,647 |
| (2462)<br>1919-20 | 148.24 | 4,307,320 |

(a) After the outbreak of war no prices were quoted, since, for a time, there was practically no market for tin. It is therefore not possible to give an average price.

In the early years of the table it will be noticed that the revenue does not follow the price of tin. This is due to the changes made in the rate of royalty collected during these years. In the latter years the connection between the price of the metal and the amount of revenue is very evident.

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‡ Estimated.

On the 31st of March, 1912, 50,691 *rai* of land were alienated for mining purposes. The following table gives full particulars as to distribution :—

| Monthon | Muang | Leases in force, April 1, 1911- | | Leases lapsed, April 1, 1911 March 31, 1912 | | Leases issued, April 1, 1911- March 31, 1912 | | Leases in force, March 31, 1912 | |
|---|---|---|---|---|---|---|---|---|---|
| | | No. | Area in *rai* | No. | Area in *rai* | No. | Area in *rai* | No. | Area in *rai* |
| Puket | Puket | 340 | 29,607* | 46 | 2,182 | 43 | 2,475 | 337 | 29,900* |
| | Renong | 139 | 5,828† | 16 | 207 | 17 | 969 | 110 | 6,590† |
| | Pangnga | 57 | 2,787 | 3 | 131 | 23 | 1,323 | 77 | 3,979 |
| | Takuapa | — | — | 5 | 98 | 59 | 3,044 | 54 | 2,946 |
| | | 536 | 38,222 | 70 | 2,618 | 142 | 7,811 | 578 | 43,415 |
| Nakon Sri Tammarat | Nakon Sri-Tammarat | 6 | 160 | 3 | 81 | 12 | 2,425 | 15 | 2,504 |
| | Songkla | 6 | 1,270 | — | — | — | — | 6 | 1,270 |
| | | 12 | 1,430 | 3 | 81 | 12 | 2,425 | 21 | 3,774 |
| Patani | Jalar | 12 | 4,105‡ | 1 | 2,000 | 2 | 407 | 13 | 2,512 |
| | Bangnara | 1 | 50 | — | — | — | — | 1 | 50 |
| | | 13 | 4,155 | 1 | 2,000 | 2 | 407 | 14 | 2,562 |
| Chumpawn | Chaiya | 1 | 110 | — | — | — | — | 1 | 110 |
| | Langsuan | 23 | 1,098 | 4 | 709 | 2 | 141 | 21 | 530 |
| | | 24 | 1,208 | 4 | 709 | 2 | 143 | 22 | ·040 |
| Ratburi | Kancha-naburi | 1 | 300 | — | — | — | — | 1 | 300 |
| | | 1 | 300 | — | — | — | — | 1 | 300 |
| Totals for the whole country | | 586 | 45,315 | 78 | 5,408 | 158 | 10,784 | 636 | 50,691 |

* Including Tongkah barbor concession of 6,955 *rai*.

† Including Ngao concession of 2,831 *rai*.

‡ Including Tamtalu concession of 2,000 *rai*.

# The Copra Trade in the Dutch East Indies

COPRA is an article that is produced in the Dutch East Indies by the natives : and while there are large areas under cultivation, the unit of holdings is very small, says American Trade Commissioner John A. Fowler. This necessitates a buying organization that covers a very large area. The field may be divided roughly into two general groups—Java and Madura and the outer possessions. The products of Java and Madura enter the world markets through Soerabaya and Batavia. There are a large number of oil mills in the East Indies, the largest of which is the Oliefabuieken Insuldie. These mills are located at points where it is easiest to get a supply of copra. They have developed organizations to cover their fields intensively.

The outer possessions find their market at Soerabaya and Makassar. The outer possessions include South and East Borneo, Celebes, the Molukkas, New Guinea, and the smaller Sunda Islands. Steamship routes of the Koninklijke Paketvaart Maatscjappij radiate primarily from Soerabaya to many of these ports, and a secondary system radiates from Makassar eastward. South and East Borneo and the smaller Sunda Islands are directly tributary to Soerabaya, while the island of Celebes, the island of Halmahera, Cerem, Aroe Islands, and New Guinea and served from Makassar.

## Plan to Control Supplies

The European markets of Amsterdam, Rotterdam and London in pre-war years had a practical monopoly on the copra of this part of the world, the oil mills of the Orient not having developed to any great proportions at that time. A plan to control the product of the territory in the interests of European markets has been developing since the early part of 1919. An Amsterdam organization, which is popularly known in the Orient as the Jurgens interests, is reported to have made a combination of Dutch, German, French and English mills. They have built a large mill in Makassar and one at Padang. Their agents in Makassar are the principal exporters of copra from that port.

# Boring for Oil in British Malaya

THE presence of profitable oil-fields in Burmah, Sumatra and Borneo has frequently prompted the query whether oil might be found also in British Malaya, which occupies a central position in these oil-bearing regions. Hopes were aroused that this query might be answered in the affirmative when in 1917 a report was made that oil had been discovered on the Erik Estate, near the mouth of the Bernam River, the boundary of the States of Perak and Selangor.

Trustworthy evidence established the fact that very small quantities of oil had been obtained from the surface of a pool on more than one occasion ; but when the government geologist (Mr. J. B. Scrivenor) visited the estate there was no sign of oil-or of any likelihood of mineral oil being found in commercial quantities. The estate is on an extensive recent alluvium of the Bernam River. The nearest exposures of older deposits are the quartzite and shale of Changkat Jong, and similar rocks in exposures on the Bernam River mapped by Dr. W. R. Jones, and the granite of the Pulo Sembilan. It was reported by the geologist in his report for 1919 that the owners of the estate proposed to sink a bore through the alluvium in the hope of finding a patch of oil-bearing rock.

In his report for the past year, Mr. Scrivener states that a deep bore was started on the Erik Estate, and that specimens from the bore are being sent to the geological department. No other details are forthcoming, but it would be welcome news if further investigations were to reveal the existence of another oil-field in British territory. So far, however, official reports are not encouraging as to the prospects of the discovery of oil-bearing strata in the peninsula.

# FAR EASTERN IRON AND STEEL

A NEW STEEL AND IRON WORKS UNDER ORGANIZATION, SHANGHAI.—The Wu-Shun Steel and Iron Works of Shanghai, capitalized at Tls. 2,000,000, is being organized in Shanghai by Messrs. Loh Pei-hung, Tai Li-kung, Loh Chin-pao, Loh Pai-tsi and several others.

* * *

ANGLO-CHINESE IRON WORKS IN CHINWANGTAO.—An Anglo-Chinese Iron Works, capitalized at $15,000,000, equally subscribed by Chinese and British interests, has been registered with the Chinese authorities and opened to business. According to report, it can produce a daily average output of 200 tons of iron and its capital is to be increased to $50,000,000 from time to time.

* * *

A NEW STEEL REFINING WORKS.—A Steel Refining Works at the Yien Poo Tan, Pootung, is to be constructed by Mr. Lu, a Shanghai merchant, as soon as he has raised the necessary capital.

* * *

GOVERNMENT WORKS CUT STEEL PRICES: JAPAN.—Governor T. Shirani, of the Government Steel Works, at Edamitsu, announced recently that an all-round reduction in prices for all sorts of steel and iron by Y.10.30, was effective immediately.

The reduction was necessitated by the steep decline of foreign steel and iron prices and will also serve to check the import of foreign stock. The steel works is contemplating disposing of the present stock amounting to 108,000 tons as quickly as possible.

* * *

IRON AND STEEL INDUSTRY IN JAPAN.—Rather a despondent view of the iron and steel industry in Japan is taken by German industrial interests as to a natural basis for an extension of the Japanese iron and steel industry; whilst Japan has at her disposal considerable quantities of coal, only a portion can be used for industrial purposes, and will therefore have to be supplemented by imports, chiefly from China. The country, however, lacks large deposits of iron ore, and China again will have to be the most important source. The extensive ore deposits in the Philippines, said to contain about 500,000,000 tons, will no doubt receive the attention of Japanese interests. Special experiments made in Japan for producing steel from volcanic ironsand were mentioned some time ago. The trials were begun in the autumn of 1920, and are said to have yielded good results, but the process has so far proved too costly for commercial purposes.

The situation is discussed in a recent article in "Stahl und Eisen" which summarises the causes which have led to a set-back in the industry in Japan. Chief amongst such influences, of course, is the reaction from the rapid development during the war. The industry was then organized for immediate profit and has lacked stability. European and American products are superior and requirements are being satisfied from these sources as conditions again become normal. The days of excessively cheap labor in Japan are past, to this difficulty has to be added a heavy fall in the prices of iron and steel. Pig-iron, which was quoted at Y.300 (say £30 at par) at the beginning of 1920, now sells at Y.80 (say £8) and is said to have even been offered at Y.62 (£6 4s.)). On the other hand, the costs of production are stated to be from Y.100 to Y.120 (£10 to £12), and only the large State steel plant at Yawata is said to be able to produce at Y.90 (£9) the ton.

Japan exceeded the limits of sound development in shipbuilding by building for speculation. This, of course, directly affected the iron and steel industry. Little assistance again has been forthcoming from the railway administration, which is postponing important works during present high cost of labor and material. Some hope of relief may be afforded by the considerable expenditure provided for in the last Budget for the Army and Navy, for which Y.738,281,000 (say £73,830,000) have been set aside out of a total of Y.1,562,000,000 (£156,250,000). The measures now under consideration for improving the position are based on the recognition of the fact that, in all endeavors to solve the problem, a close connexion must first be established between the iron and steel industry and shipping or shipbuilding. The recommendations made some time back by the financial and economic committee appointed by the government include the amalgamation of all groups of works concerned, the introduction of protective duties, the importation of shipbuilding materials free of duty, and the subsidising of home-made steel for shipbuilding purposes. The suggestions even go so far as to advocate the creation of a national shipping trust with government aid, headed by the Nippon Yusen Kaisha, the largest shipping concern in the country.

The combining of the industrial works so frequently referred to in these pages meets with difficulties which again are due to the rapid development in recent years. The size and organization of the different undertakings are too varied and the financial basis shows too wide differences. Nevertheless, the necessity for such a combination has so far been recognized by a special committee entrusted with an examination of the situation, who have recommended the establishment of a community of interests between the leading works in such a form as would practically create a steel trust. A financial participation of the State seems to have been taken into consideration in this connection.

* * *

COST OF IRON AND STEEL PRODUCTION IN CHINA.—The iron ore, of which from fifteen to twenty thousand tons were required every month when three of the four furnaces were under operation in 1919 (perhaps another eight or nine thousand tons would be needed for the fourth furnace) comes from the company's own mines at Tayeh. The cost of its production at Tayeh was below $2.80 per ton (in 1919), but the cost of transportation per ton from Tayeh to Hanyang was 85 cents which, together with other expenses, brought the cost up to about $4 per ton at the Hanyang furnaces. This cost is now much lowered by smelting the ore in the new blast furnaces at Tayeh, but at the same time a greater allowance must be made for coke which has to be transported from *Pinghsiang to Hanyang and thence again to Tayeh.* As nearly equal quantities of coke and ore are used in the furnaces, the saving effected in transportation is not of much significance.

OTHER RAW MATERIALS.—Limestone also comes mainly from Tayeh. The cost per ton at the Hanyang furnaces varied in 1919 between $2.32 and $3.81. These figures include all transportation and overhead charges Manganese comes from the company's mines at Changlai and Yangshin. Those two items amounted in 1919 to three or four per cent. of the total cost. The following figures for the first seven months of 1919 will show *the comparative costs of the different kinds of raw materials*:—

| Month. | | Coke. | Iron Ore | Native White Iron. | Manganese, Limestone, etc. | Total for Raw Materials |
|---|---|---|---|---|---|---|
| | | % | % | % | % | % |
| Jan. 1919 | ... | 45.7 | 13.8 | 13.5 | 3.9 | 76.9 |
| Feb. ,, | ... | 48.1 | 14.7 | 5.2 | 4.7 | 72.7 |
| Mar. ,, | ... | 47.0 | 12.2 | 9.7 | 4.7 | 73.6 |
| Apr. -,, | ... | 55.4 | 14.1 | 1.9 | 4.2 | 75.6 |
| May ,, | ... | 51.8 | 13.4 | 8.1 | 4.3 | 77.6 |
| June ,, | ... | 52.5 | 13.4 | 7.9 | 4.7 | 78.5 |
| July ,, | ... | 53.7 | 12.7 | 8.4 | 5.0 | 79.8 |
| Average | ... | 50.6 | 13.5 (minus) | 7.8 (plus) | 4.5 | 76.4 (minus) |

The above refers to raw materials. The next group of items of cost concerns direct wages. This includes not only the wages of laborers working at the furnaces, but also of those working at the blowing and pumping plants, both of which are essential adjuncts to the furnaces. working at the furnaces, but also of those working at the blowing and pumping plants, both of which are essential adjuncts to the furnaces. There are in the Hanyang Works blowing and pumping plants for each set of two furnaces and the wages of the laborers working at these plants are therefore divided into two equal parts, one part being assigned to each furnace. For convenience' sake the laborers working at the furnaces are also divided into four groups. The first group works at the stock house where raw materials are fed into the furnace; the second watches the smelting process through which the materials pass; the third attends to the casting hall where the molten iron flows into the moulds; and the last group looks after the devices by which the slag is disposed of.

The wages of the laborer differs not so much with the group in which he works, as with the grade of labor to which he belongs. In general the laborers are divided into four grades; namely, the foremen, the mechanics, the regular laborers and the helpers who are paid by the day. The salaries of the foremen may be in some cases as high as one hundred dollars a month; the mechanics receive about twenty dollars; the regular laborers from 8,500 to 9,000 cash (at the present rate of exchange between silver and copper, about $7) and the helpers get only 200 cash a day, (about 15 cents). In some cases contract labor is also employed.

The laborers work in two shifts, night and day. In each shift about two foremen, three mechanics, and fifty laborers work at each of the small furnaces, and about twice as many laborers work at the No. 3 furnace. As the wages are very low, the total cost in direct labor for all three furnaces totals only from 0.8 to 1.4 per cent., of the total cost of iron production. The advantage of cheap labor is phenomenal, and if the iron industry does not prosper, and if the cost of iron does not come below that in other countries, the blame cannot be laid on labor. It cannot even be said that the latter is cheap but inefficient, because inefficient labor would combine a low rate per man with a high per cent. cost per unit of product, which condition does not obtain in the present case.

*(To be Continued).*

# Engineering, Financial, Industrial and Commercial News

## AGRICULTURAL

**Sugar Cane Cultivation in Chekiang.**—A number of overseas Chinese are attempting to introduce Formosan sugar cane into the province of Chekiang and its surrounding territories and have established a number of experimental farms. The seedings imported from Formosa are said to be growing well.

**Agricultural Depot, Harbin.**—An agricultural depôt covering an area of 5,000,000 square feet is being established with a capital of $1,000,000 on west of Sungkiang-chen, Harbin.

**Growing Demand for Harvesters in Manchuria.**—It is reported that there is an opportunity in Manchuria for the introduction of bean harvesters and thrashers of from 4 to 8 horse-power, suitable for the cultivation of the soya bean, the principal export crop of the district. There is also a market for thrashing machines with cylinders not to exceed 28 inches, and of about 8 horse-power, mounted on wheels, and also for small mills to husk rice, kaffir corn, millet and other grains, according to an article in *Finance and Commerce.*

## AUTOS

**Changsha-Hsiangdai Military Road to Run Auto Service.**—Mr. Chen Tze, gentry of Hsiangdai, Hunan, has entered into an agreement with the Hunan provincial authorities for renting the newly built Changsha-Hsiangdai military road for running automobiles. A company named Loong Hsiang has been established with a capital of $100,000 to undertake the enterprise and ten auto buses capable of accommodating 32 passengers each at a total cost of about $70,000 have been ordered from Shanghai.

**British Cars for Japan.**—Several of the principal motor manufacturers have of late received numerous enquiries from Japan in regard to the importation of British cars into that country. Hitherto the bulk of the trade has been in American hands, but there is a growing demand for substantially built vehicles having the quality of finish which has always characterized the British car. Outside the principal cities Japanese roads are not of the best, and it is essential that to make good out there a car must be an uncommonly good hill-climber. A member of the British trade who has for some time past been making a study of the Japanese market reports that motor-tractors are also likely to find a good sale, as there is a call for them in many of the sugar-producing areas.—*B. C. C. J.*

## AVIATION

**The Peking-Kansu Air-Line.**—With reference to the air-line between Peking and Kansu, it has been decided that a landing field will be established respectively at Lanchow and Ping-liang in the province of Kansu. The stations will have a length of 300 feet and a width 100 feet and are to be completed in November, when the air-service is expected to begin. The governor of Kansu has been instructed by the ministry of war to that effect.

**Oversea Aerial Flight: Japan.**—The first oversea long distance aerial flight is to be held between November 10 and 20 under the auspices of the Imperial Aeronautical Association, Tokyo. The proposed route is to start at Liushutun opposite Dairen across the Dairen Bay and to pass over Seoul, Taikyu and Fusan, stopping for the night at Seoul. Then, the aeronauts will land on Okinoshima in the channel and will choose either Tachiarai (Fukuoka), Kurume or Kumamoto for the destination. The distance to be covered is 1,200 kilometres and the time required is put at 8 hours. The prizes offered are Y.30,000, Y.25,000 and Y.15,000 for the 1st, 2nd and 3rd prizes. Judges are to be stationed at points on the proposed route.

**New Aeroplanes, Japan.**—Large army aeroplanes, 25 in number, ordered from France, have arrived and have been transferred to the Japanese army aerodrome at Tokorozawa. After a trial flight at Tokorozawa the newly-imported craft will be distributed to the various army divisions. These aeroplanes are for the purpose of dropping bombs and carrying war supplies. They will be capable of carrying 15 men and of continuous flights of 16 hours.

**Private Air Service for Szechuan.**—Several aviators in Szechuan have recently gathered a capital of $600,000 for the establishment of an aerial transportation service by airplanes.

According to the plans four large seaplanes, each having a capacity of carrying 30 passengers and cargoes are to be purchased for the Ichang-Chungking service and several smaller ones for the service in the interior, besides a number of motor-boats. A petition has been submitted to the ministry of communications and the aeronautic department who have been requested to grant the registration.

The aeronautic department, considering that the name of the said Company, the Chuan-Kiang Aerial Company, would confuse the name of the aeronautic department, has replied ordering the promoters to change its name first.

Some time ago a French merchant purchased a seaplane for preparing to start a commercial service between Szechuan and the Yangtze. Owing to the importance attached to it, the government has flatly refused to give permission to the French merchant.

## BRIDGES

**To Re-Construct Bridges Along Peking-Mukden Railway.**—In order to avoid possible breakage of bridges at Liu-ho-kew, Pei-gee-pao and Sing-ming during the rainy season, General Chang Tso-lin has proposed to construct strong iron bridges between the section from Mukden to Shanhaikwan in place of the old ones.

**Belgians Given Yellow River Bridge to Build.**—The tender examination committee appointed by the ministry of communications has awarded the contract for the Yellow River railway bridge to the Societe Belge pour l'Exploitation Industrielle, which estimates the cost at $10,500,000.

Prizes of $80,000 and $25,000 respectively, are awarded to the Compagnie Generale d'Extreme Orient and another French company for the second and third-best tenders.

## BUILDINGS

**New Ruilding for Chinese Post Office.**—The Chinese postal administration invites tenders in competition for the election of a two-storeyed office building at the directorate-general of posts, in the ministry of communications, Hsi Chang An Chieh, Peking.

Plans, specifications and forms of tender may be obtained on application to the chief secretary, directorate-general of posts, Peking.

**May Build Y.500,000 Museum in Uyeno.**—A Y.500,000 museum, to be known as the Citizens' Museum and to be planned as a place for materials scientific, historical and botanical from all parts of the world, will be built in Uyeno Park within the next few years if plans now being considered by municipal authorities there are carried out. The proposal to erect such a building is said to have come at the instance of Mayor Baron Goto.

**New Building for Soochow Telephone Exchange.**—The new building for Soochow telephone exchange is being built at Lu-chu-fong-hong, Soochow. The construction calls for an expenditure of more than $70,000 and the work is to be completed in ten months.

**Chinkiang to Build Large Storehouse.**—As 15 locomotives and 200 forty-ton freight cars have been lately added to the Shanghai-Nanking Railway's rolling stock, the storehouses along the line will be consequently extended so as to be able to hold more goods. The station master at Chinkiang has received instructions to that effect from the traffic manager of the above-mentioned railway, and the old warehouse there will be enlarged if there is any spare space around it.

## COMMERCIAL

**Coal Tar Pitch for Briquettes.**—Suppliers of coal tar pitch for the above purpose and enquiring for consumers of the above products.

Mr. E. S. Little, Australian trade commissioner in China, will be glad to answer any enquiries on the subject.

**A Chinese Bazaar.**—Mr. Wu Ting-seng, one of the directors of the Nanyang Bros. Tobacco Co., Ld., and several other prominent Chinese merchants have established the Shanghai Bazaar, Ld., in Shanghai. The bazaar will be capitalized with $800,000 in shares of $10 each. One quarter of the authorized capital will be paid up.

**Glass for Manchuria.**—The Japanese Consul at Kirin has called the attention of Japanese glass manufacturers, in his cable report to the Japanese foreign office, to the fact that strong competition is possible in North Manchuria among Japanese, American and Belgian glass manufacturers. American and Belgian cargoes have already come into the North Manchurian market in increasing numbers, according to the report. The building industry in and around Kirin presents much depression following the general hard times since last year. Glass is in less demand, but fair sales are maintained. In the retail trade Japanese-made "Kuro Hisbi" is quoted at and around Y.22 per boy although the ruling prices are roughly a decline of 4 per cent. as compared with the early part of last year, when business was good.

**Need for Extension of American Trade in Swatow.**—There are no American general importing and exporting firms in Swatow, and exports from this district are chiefly to the Straits Settlements, Siam and French Indo-China. These exports consist mainly of food products and household articles for the use of the Chinese communities in those countries. Until there are American firms in Swatow to handle and develop trade along lines which could be profitably exported to the United States, Consul M. S. Myers believes that only increases in American business can be expected. Personal contact with the market is more essential in China than in most other countries, not only on account of its peculiarities which must be studied and catered to but on account of the lack of knowledge on the part of Chinese merchants of the requirements of foreign trade and to their lack of qualifications for handling same. Following are the chief articles exported to western countries, most of these being for manufacturing purposes:—Drawn work, crochet and filet laces, groundnut oil, camphor, feathers, jute fiber, hides and skins (chiefly buffalo), rapeseed, wolfram ore and bismuth. There are large deposits of lead, silver, manganese, coal (inferior grade), iron, wolfram and bismuth in this district. There are no factories of any importance. Since the climatic conditions of Swatow are particularly favorable for the manufacture of cotton piece goods, Consul Myers considers the question of locating in this large market worthy of investigation.—*Commerce Reports.*

**German Trade Increasing in Manchuria.**—In their effort to recover the lost markets in the Orient the Germans are offering new inducements, states the *Manchuria Daily News.* The period of credit allowed to buyers has been further extended by several months and goods of excellent quality are offered at very low rates. As a result German goods are becoming popular. In south Manchuria German wares are increasing, although still in indifferent quantity, but in north Manchuria, especially about Harbin, the tendency to buy German products is becoming pronounced. Stocks of dyestuffs, paints and varnishes, precious metals, electro-plated ware, gold and silver powder, hardware, etc., are arriving in Harbin and the demand for these German manufactures has been particularly brisk.

**Big Trade Combine for South Seas.**—The establishment of the South Seas Trade Trust and Guaranty Union, Ltd., was consummated yesterday (Thursday) under the auspices of the Nichinan Trading Company, the Morinaga Confectionery, the Dai Nippon Beer Brewery, the Mitatsuchi Rubber Company, the South Seas Trading Company, the Nippon Yusen Kaisha, the Osaka Shosen Kaisha and the South Seas Mail Steamship Company, all interested more or less in the Japan-South Seas trade.

The Union is capitalized at one million yen, a quarter of which had already been paid into the treasury. The paid-up capital will be made a fixed deposit, for which the bank will accommodate capital to the amount of one million yen.

The object of the establishment of the union is the recovery of Japan's trade in the South Seas, which was shaken up by the economic depression, to its antebellum prosperity.

**Fukienese Organizing a Native Products Corporation.**—Some Fukienese emigrants at Nanyang Archipelago are organizing a native products corporation capitalized at $1,500,000 with the purpose of introducing Chinese products into foreign markets. The corporation will have its domestic head office in Amoy and foreign one in Manila with branch offices at Foochow, Chienchow, Chongchow and various principal ports in the Philippine Islands.

**A Sea-Food Company Being Organized.**—Plans are on foot by a Chinese capitalist at Shanghai to establish a marine delicacy products company at some suitable place with branches along the coast. Some experts have been sent to the maritime provinces to select suitable places as a site for this purpose.

## DEVELOPMENT

**Latest Report of New Corporations Registered.**—According to report, the following corporations have been registered with the ministry of agriculture and commerce:—

Yue Chong Flour Mill, Kirin.
Hua An Forestry Co., Mukden.
The Central Trading Corporation, Peking.
Yung Tai Wu Tobacco Co., Shanghai.
Lu-cheng Straw Hat Co., Ltd., Shansi.
Kwan Sui Electric Light Plant, Kwan-sui, Suiyuan.
Woo Foong Co., Ltd., Honan.
Tsing-chang Matches Factory, Shansi.
Tsing Foong Flour Mill, Shansi.
Hua Ching Flour Mill, Tsinan.

**New Company to Facilitate Communications. Yunnanfu.**—Kweng-Yu Navigation and Autobus Service Co., Ltd., is being established at Yunnanfu with a capital of $1,000,000 in 100,000 shares of $10 each. The object of the new organization is to improve transport system and facilitate communications by running steam launches in the rivers and automobiles on land. At Kweng-ming, Hai-kow, Chen-kung, Tsin-ning and Kweng-yang respectively, a jetty will be built as stations for the launches to allow passengers to board or leave, while autobus service will be operated between Kweng-yang and Yu-chee. It is reported that some local officials are participating in the enterprise.

**South Manchuria Railway Co. Enterprises.**—The estimates for the fresh enterprises of the South Manchuria Railway Co. for the new fiscal year (1921) have been sanctioned by the central government, states an issue of the *Manchuria Daily News.* In drafting the estimates such enterprises of urgent nature only as have been continued from the preceding fiscal year have been included in the program, because of the present economic depression. Since there is said to be a sum of about Y. 20,000,000 of enterprise fund available from the accounts for the fiscal year 1920, the actual total available for the current fiscal year will reach Y. 75,960,000. The main features of the new estimates are: Railway improvements, Y. 13,920,000; shipping, Y. 1,180,000; harbor works, Y. 4,763,000; mining equipments, Y. 1,004,000; industrial enterprises, Y. 1,338,000; iron and steel works, Y. 1,555,000; electricity and gas works, Y.2,485,000, sundry enterprises Y. 1,225,000; hotels, Y. 145,000; local administration, Y. 3,322,000; city planning, 4,602,000; buildings, Y. 6,422,000; reserve fund, Y. 4,000,000.—*Commerce Reports.*

**Latest Report of New Corporations Established.**—The following corporations have recently been registered with the ministry of agriculture and commerce:—

Pai-Hwei Bag Making Co., Hweiying, Kiangsu.
Tung Yih Banking Corporation, Kiangsi.
Yee Cheng & Co., Kwei-yung, Kiangsu.

**A New Sino-Japanese Enterprise in Mongolia.**—It is reported that an agreement was entered into on July 18, 1921, between Marshall Chang Tso-ling, inspector general of Manchuria, and some Japanese interests for the establishment of the Shun Fah Corporation with the purpose of bringing desert Mongolia into modern cultivation under Sino-Japanese management. General Chang has subscribed a lot of land lying at Chen-char-dung, which is said to be very productive and fertile, at a value of Y.4,000,000 and the Japanese capitalists have subscribed an equal amount in cash, making a total capital of Y.8,000,000. This is the first Sino-Japanese enterprise ever undertaken in Mongolia.

## ELECTRICITY

**An Electric Light Co. Under Organization at Tunghsien, Chili.**—The Tseng Hwa Electric Light Co. is being organized by Mr. Cheng Yao Yung at Tung-hsien, Chili.

**Electric Flour Grinding Machine Invented.**—Mr. Yao Sher-ngai, a native of Chang-ping Hsien, Chili, has invented a flour grinding machine driven by electric power, having a producing capacity equivalent to ten workmen. Two model machines have been submitted to the ministry of agriculture and commerce with the request of granting a patent.

**An Electric Plant Established, Hupeh.**—An electric light plant has been established by Mr. Wang Yu-wen at Lao-wu-kow in Kwang-hua Hsien, Hupeh.

**Chinese Electrical Industry.**—Foochow Chinese merchants are interested in a scheme for a hydro-electric plant to develop power from the Min river. It is reported that American capitalists have been approached in connection with the proposed venture.

A number of local Chinese are contemplating the opening of an electrical goods factory, with branches at Shanghai, Soochow and Wusih. The Chinese press states that the promoters are joining hands with the German firm of Siemens for the manufacture of newly-invented goods.

**Electric Plant Under Organization, Fukien.**—It is reported that an electrical plant is being established at Nan-yar-kow, Fukien, by some local capitalists, and Messrs. Ling Tze-zan and Chen Kwei-sze have been given the power of attorney to purchase machinery from Shanghai.

**Peking Electrical Development.**—The Peking government is reported to be taking a serious interest in the pressing need of both Peking and Tientsin for further electrical developments. Does this mean another loan!

**British India Electrical Development.**—Electrification of the suburban railways within twenty-five miles of Calcutta is considered.

The Punjab Hydro-electric and Industries Association, with headquarters at Delhi, proposes to develop electrical power on four canal falls to increase the present supply at Simla. Negotiations are proceeding for the installation of electricity at Rawalpindi, Multan, Lyallpur, Jullunder, Sialkot and Gujranwala.

**An Electric Light Plant Under Organization.**—Mr. Hsu Tze-tsin is planning to organize an electric light plant at Sun-Fong-Chen, a leading town in Wen-an-hsien, Chihli. Regulations governing the organization of the new company have been submitted to the authorities concerned for permission.

**To Supply Mukden-Fusan Industries with New Electric Power.**—Arrangements have been made by the representatives of the South Manchurian Railway and other Japanese interests in Manchuria to run a power cable between Mukden and Fusan to supply industries, mines and some motive power in the railroad zone and the two terminal cities. A Sino-Japanese corporation will be formed to manufacture and distribute the power which is not seriously needed for various business enterprises in the rail zone. The Chinese will have one advisor and one director, all other officials and employees in managerial capacities being Japanese, Chinese will get 40 per cent. of the of the net profit.

**Electric Enterprises in Japan.**—Investigations made by the electric bureau in the department of communications show that at the end of April of this year, the number of companies undertaking electric operations throughout this country totalled 821, with an aggregate capital Y.1,353,006,911, and the electric power generated amounted to 1,405,825 kilowatts, of which 1,061,472 kilowatts are generated by hydraulic power and 344,353 kilowatts by heating. Compared with the end of last December, these figures show an increase of five companies, of Y.77,951,050 in aggregate capital and of 36,187 kilowatts in generated power.

**Market for Electrical Equipment in Siam.**—In a recent issue of "Eastern Engineering" reference was made to the satisfactory increase last year in the imports into Siam of electrical goods and apparatus from Great Britain. The United States, however, it should be pointed out, was the heaviest contributor of this class of machinery to Siam during the fiscal year 1919-1920, and it is believed that with greater enterprise Great Britain might easily improve her position.

Owing to the fact that no electrical apparatus of any kind is manufactured in Siam, there is a demand for all classes of such goods, with the addition of specialties needed for a tropical country. The import duty on all electrical goods is 3 per cent. *ad valorem*. There are no other restrictions in this trade, and it is not required to have the country of origin stamped upon any articles sold in this kingdom.

There has hitherto been no development of hydro-electric power in Siam, and in years with normal rice crops paddy husk is used for fuel, owing to its cheapness and the fact that the cost of oil, coal and wood is comparatively high, as compared with neighboring countries. Bangkok, it may be recalled, is as yet the only city in the kingdom furnished with electric light and power stations, of which there are two—the Siam Electricity Co., Ld., which is just adding a new 2,000-2,800-k.w. turbo-generation, and the Samsen Power Station. The former supplies light and power to the public generally throughout the city, while the latter is the municipal light and power station for Bangkok, also providing lighting for a large area occupied by royal palaces, and motive power for Bangkok waterworks for the opium factory, and the Siam cement works.

**Weishien Electric Plant.**—Weishien, one of the larger commercial centres of the province of Shantung, will soon have a modern electric light and power plant. The completion of the Weishien-Chefoo highway and the resulting influx of business has necessitated the move.

**A New Chinese Venture.**—A number of local Chinese are contemplating the opening of an electrical goods factory, with branches at Shanghai, Soochow and Wusih. The Chinese press states that the promoters are joining hands with the German firm, Siemens, for the manufacture of newly invented goods.

**Plan for Hydro-Electric Plant.**—Foochow Chinese merchants are interested in a scheme for a hydro-electric plant to develop power from the Min river. It is reported that American capitalists have been approached in connection with the proposed venture.

**Hydro-Electrics in Japan.**—Industrialists in Japan are alive to the development of their water-power resources to the full, and schemes of gigantic combines are being discussed. The Harima Hydro-Electric Company, with a capital of Yen 2,500,000, has only recently been amalgamated with the newly-organized Ryobi Hydro-Electric Company, Okayama prefecture, which has a capital of Yen 5,000,000. The amalgamated concern will increase its capital to Yen 10,000,000. The combine aims at an output of 15,000 kilowatts. In the Kyushu district there is a proposal afoot to amalgamate the electric companies operating in the district. These companies are the Kyushu Electric Light Railway Company, the Kyushu Hydro-Electric Light Company and the Kyushu Electric Railway Company. There is also a new company, the Kyushu Power Transportation Company, about to be formed.

**Weihsien-Fangtze Electric Plant in Progress.**—The organization of the Weihsien-Fangtze Electric Plant of Shantung, promoted by Mr. Ma Chi-ping, is proceeding steadily. The plant at Fangtze has already been operated, and efforts are being made to hasten the inauguration of the plant at Weihsien. A piece of land on which to set up factory building has been purchased at Weihsien and a set of up-to-date machinery is being ordered from Shanghai.

**Telephone and Electric Light Activities.**—Surveys are being undertaken at Ch'ihfeng (Hata) in the Jehol administrative area for the installation of a telephone service and an electric light plant under semi-official auspices.

The Sun Fan Electric Light Company organized by Hsu Ts-tsin has petitioned the ministry of communications and the ministry of agriculture and commerce for registration.

The Kuang Hua Electric Light Company organized by Wang Yu-wan at Louhokou, has been registered by the ministry of agriculture and commerce.—*Bureau of Economic Information.*

**Proposed Electric Power Scheme for Federal Malay States.**—At a meeting of the federal council of the Federated Malay States, held at Kuala Lumpur during April, writes Consul Renwick S. McNiece from Penang, it was decided to engage an electrical investigation staff to investigate the question of a public power supply. The sum of $150,000 (Straits currency) was voted to defray the salaries and expenses of this staff, which included ten engineers, surveyors and draftsmen. A preliminary survey had already been made by the government electrical advisor, which called for an expenditure of approximately $40,000,000 (Straits). The development of a comprehensive electric power scheme would be of tremendous value to the industrial facilities of the Federated Malay States, and the application of low cost power to the mining of tins should greatly stimulate that industry.—*Commerce Reports.*

**Proposed Electrical Moving Roadway, Japan.**—The Japanese are now paying much attention to the improvement of their roads, and in this connection a project of a Tokyo capitalist, Mr. S. Hirao, to improve the traffic conditions between Motomachi, the principal shopping centre in Yokohama, and the Bluff, where there are a large foreign colony and some of the best houses in the city, deserves mention. The Jirozaka hill between Motomachi and the Bluff is a serious problem for motorists and ricksha-men, and Mr. Hirao proposes to build a moving road operated by electricity. He claims that the moving roadway is his own invention. In his application to the Mayor of Yokohama for permission to carry out his project, he points out that on the completion of his moving road he intends to levy a toll on vehicular traffic passing over it.

**An Electrical and Engineering Co. Under Organization at Shanghai.**—Mr. Sze Chao-tseng, director-general of the Lung-hai railway, is establishing, with some other Chinese capitalists, the Tseng Hwa Electrical & Engineering Co. at a capital of $1,500,000 with head office at Shanghai and branches at Soochow and Wusih. It is reported that the new company has entered into an agreement with the Siemens China Electrical and Engineering Co., Germany, stipulating that the former is to be the sole agent in China for selling the latter's productions and new inventions, and that no other companies in China are entitled to the same privileges.

## COMMERCIAL FINANCE

**Far Eastern Bank in Peking.**—Messrs. Wu Yi ching and Nien Sho-wu with several Italian capitalists, are organizing the Far Eastern Banking Corporation in Tientsin with its branches in the various principal ports of China. The bank is capitalized at $5,000,000 which is said to have been fully subscribed.

**Amoy Bank Established.**—Referring to the establishment of an agriculture and industry bank in each prefecture in Fukien as instructed by the Foochow industrial bureau, the Agriculture and Industry Bank of Amoy has been organized with a capital of $200,000 by Mr. Wang Chin-yuan, a gentry of Amoy.

**A Large Exchange Proposed by Japanese in Harbin.**—Some Japanese capitalists in Harbin are proposing to organize a large exchange transacting stock and produce with a capital of $10,000,000 to be equally subscribed by Chinese and Japanese interests.

**Sino-Scandinavian Bank is Granted a Charter by Peking.**—The Chinese government has granted a special charter for the Sino-Scandinavian Bank, with a nominal capital of $10,000,000, and a minimum paid capital of $2,500,000. The bank has the right to issue paper currency. Mr. Chang Tien-tao, former minister of agriculture and commerce, has been elected president and Mr. Harold Skappel, Norwegian, vice-president. It is expected that the bank will open for business in Peking, Shanghai and Hongkong in October next.

The principal shareholders are Mr. Chi Weihsin, Shanghai cotton mill owner, Mr. Chen Chung-mei, president of the Canton Bank, and many influential persons in the service of the government. The shares on the Chinese side are oversubscribed.

## GOVERNMENT FINANCE

**Amendment to the Government Iron Foundry Funds Act Announced: Japan.**—A statement appear in the Japanese official gazette, of the amendment of the Government Iron Foundry fund act as promulgated in 1905. The provision in the original law that the ministry of the department of finance may temporarily fill up the shortage in deferred circulating funds for the monopoly bureau and the iron foundry by a loan or by issuing accommodation papers to an amount not to exceed Y.90,000,000 for the monopoly bureau and Y.60,000,000 for the iron foundry, has been changed to read Y.98,000,000 in the case of the iron foundry. It is also added that the minister of finance may apply the national surplus money within the period of the fiscal year instead of issuing the loan or accommodation papers. The purpose of this amendment, it is believed, was to permit the government iron foundry to secure a loan of Y.98,000,000 in the hope of avoiding the necessity of dumping its stocks during the period of financial depression.

**Chu Chi-chien and French Loan.**—The *I Shih-pao* publishes a report that while in France, Mr. Chu Chi-chien concluded a loan amounting to 300 million francs, the proceeds to be appropriated in the following order :—

25 million francs to be spent for the up-keep of the Banque Industrielle de Chine, two hundred million francs to be used for the purchase of aerial machine sand appliances thereof, the syndicate advancing the money securing the monopoly of the supply, and the balance of 75 million francs to be appropriated by the Peking government.

**$3,000,000 British Loan is Reported.**—The *New Society* is responsible for the report that a concern called the British Royal Syndicate has arranged to furnish to the ministry of finance a loan of $3,000,000. The paper says that the loan is to be secured on the surplus funds of the customs, that the rate of interest is eight per cent., the price of the loan eighty-five, and that the cabinet has given its approval. The first payment, $1,000,000, is to be made on the day the loan is signed and the balance forty-five days later. The paper adds that the loan will be signed very soon.—*Reuter.*

## FORESTRY

**Kirin Governor Interested in Forestry.**—Genera Shun Li-chung, military governor of Kirin, has designated two forest areas in the province of Kirin at Wenchun and Yenchi respectively to develop forestry. In each of the designated areas, a forestry bureau has been established and a commissioner appointed.

**Forestry Co., Harbin.**—Mr. Chao Tze-nan is establishing a forestry company at Harbin with a capital of $100,000 to plant and cultivate trees under modern methods. A tract covering 27,000 *mow* situated about 10 *li* north of Sung-kiang-chen has been purchased for the purpose.

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## GENERAL

**Economic Condition in Formosa.**—There have been tremendous vicissitudes in Formosan business circles since the economic panic, states the *Japan Chronicle*. During the first half of the current years, 31 companies were created with a total capital of Y.19,403,000 (Y.6,916,000 paid-up); three extended their capital of Y.6,000,000 by Y.175,000; five wrote down their capital of Y.1,514,000 by Y.264,000; and 30, with a capital of Y.14,479,000 paid-up, went into liquidation.

**Fishing Industry in China.**—Several Shantung capitalists have raised a sum of $5,000,000 for the purpose of establishing a fishery company in Chefoo, to be known as the Hua Tung Co., Ltd. Sixty fishing boats are to be purchased and modern methods will be followed. The fishery area includes the Yellow Sea and Hoang Hai for the time being, but will gradually be extended later. The plans of the company cover :—

1. A well-equipped factory for the preparation of canned fish.
2. A fertilizer manufacturing company for fishery waste.
3. A fishery bank for the deposits of, or loans to, the people engaged in the fishery industry.
4. The collection of deep sea specimens for the purpose of exhibition.

The company has been registered at the ministry of agriculture and commerce.—G.B.E.I.

**Ceilings Made of Newspapers, Manchuria: Works Needed.**—The demand in Manchuria, China, for old newspapers is very great. These are used principally for the first layer of paper on interior walls and ceilings of houses. Chinese houses in Manchuria invariably include no ceilings when completed, the ceilings being installed by the tenants or owners after the masons and carpenters have completed their part of the contract. The ceilings are made of a framework of millet stalks, which are, as a rule, first covered with old newspapers and then with a layer of Chinese white paper. Partitions made in the same manner are also largely used in both shops and dwelling houses. Previous to the war old papers from abroad sold at 4½ cents a pound, while the prevailing price for Chinese and Japanese paper is now 3½ cents a pound.

**Ningpo Merchants to Develop China's Fishery.**—Ningpo merchants, Mr. Wu and Mr. Chang, are planning the establishment of a fishery corporation in Shanghai with the purpose of developing the fishery industry of China. Arrangements have been made with the fishers in Ningpo, Taichow, Wenchow and at the Kiangsu and Fukien coast for co-operation and mutual assistance.

**Chih-feng to Establish Telephone and Electric Light Co.**—The Peking government is contemplating to establish a telephone and electric light company at Chih-feng, and a Mongolian officer has been dispatched to undertake the enterprise.

**Hing-Noon Irrigation Co. Being Organized, Fukien.**—The Hing Noon Agriculture and Irrigation Co., which is under organization with a capital of $200,000 by Messrs. Tsung, Shao and Ling, will be opened at Foochow in September, 1921. The corporation will be operated by electric power and a 72-H.P. boiler and a pumping engine, ordered from America, have arrived.

**Bridges and Automobiles Required on New Roadway.**—In connection with the construction of the proposed Shanghai-Minghong-Choling automobile road, it is estimated that, after careful surveying twenty-nine bridges are to be built along the whole line of 91 *li* long, and that over 900 *mow* of land are to be purchased. The Automobile Transportation Co. will soon place an order for twenty 30-H.P. passenger automobiles with a dimension of 18-ft. 3-in. long, 7-ft. 3-in. broad and 6½-ft. high, capable of running at a speed of 20 miles per hour and accommodating 25 persons, at a cost of about $7,000 each, and 4 freight autos at a cost of about 5,000 each. As Minghong is separated from Choling by the Whampoo river, two steam launches at a cost of about $4,000 each must be ordered to carry passengers over the river at the ferry.

**The Future Prosperity of Chengchow, Honan.**—After consultation with the Honan civil governor, Mr. Chang Tze-sui, industrial commissioner of Honan, has decided to develop Chengchow, the interesting point of the Peking-Hankow and Lung-Hai railways, by opening it as a commercial port. The first step is to establish a bureau to take charge of affairs regarding the execution of the scheme.

**Latest Report of New Corporations Organized.**—The following corporations have been recently registered with the ministry of agriculture and commerce :—

Yue Hua Cotton Spinning & Weaving Co.
Kichow Electric Light Co., Kichow, Kiangsi.
Beewax Co. of Kiangsu and Chekiang, Kiangsu.
Bank of Manchuria, Fengtien.

**A New Road and Attendant Requirements.**—The Szechuen provincial government has formulated a plan for the construction of an automobile road 22 ft. in width from Chentu to Chungking via Pih-shan and Loong-chang. According to estimates, the scheme calls for an expenditure of about $2,000,000, which the authorities are endeavoring to devise some means to raise. Thirty motor buses will be ordered for use on the road and the journey will be made in 24 hours. The work is expected to take 6 months to complete, using ex-soldiers for labor. Mr. Liu Chun-shu, director of Hanyang Arsenal, has been instructed to take charge of the work and surveys of the line are being carried on by German engineers.

## INDUSTRIAL

**A Brick and Tile Manufacturing Co. Under Organization.**—Mr. Chien Sing-tze is organizing the Tai-Shan Brick and Tile Manufacturing Co., in Shantung.

**Taiyuanfu to Open a New Flour Mill.**—A new flour mill named Tsing Foong is being established at Taiyuanfu, Shansi.

**Two Mills Established in Chinkiang.**—There have been recently established in Chinkiang two modern factories equipped with machinery; one by Mr. Li Chin-tze for satin weaving and the other named Teh-hua by Mr. Wang for silk weaving.

**A Brick Plant Established in Sungkiang.**—A modern brick plant equipped with German machinery commenced to operate in July at Sungkiang, Kiangsu. Its promoter is Mr. Shao Tsai-hua, a returned student from Japan.

**A Cotton Weaving Mill Established, Sungkiang.**—The Yung Tai Cotton Weaving Mill was established some time in May by Mr. Mee at Sungkiang.

**A Paper Mill at Kashing, Kiangsu.**—A paper mill to manufacture Chinese mulberry paper is being organized at Kashing, Kiangsu, with a capital of $50,000 by Mr. Cheng.

**Newly Invented Cotton Making Machine Registered.**—Mr. Li Pong-ji has formed a company with a capital of $10,000 at Lu-mar-tze, Peking, to manufacture artificial cotton with a new machine recently invented by him and registered with the ministry of agriculture and commerce.

**Proposal of Two Factories, Wen-An Hsien.**—The influential citizens of Wen-an Hsien, Chihli, have formulated a plan to establish a modern factory to manufacture cloth, to gin cotton and to make towels, and also a factory for girdle weaving and blanket making.

**Bamboo Screen Making Machine Invented.**—Mr. Hur Yang-chun has invented a bamboo screen making machine capable of weaving twenty screens from coarse bamboo in 11 hours and the new invention has been sent sent to the ministry of agriculture and commerce for registration.

**A Canned Goods Manufacturing Co. Established, Chihli.**—The Sing Chung Canned Goods Co. manufacturers of preserved goods and condiments has been established under the approval of the ministry of agriculture and commerce at Chang-lee Hsien, Chihli, by Mr. Yang Yung-shun with a capital of $100,000.

**Anhwei to Have Five Model Factories.**—The plan, as proposed by the industrial commissioner at Anking, for the establishment of five large model factories in the province of Anhwei is being carried out energetically. The first and second factories at Anking and Dung-chee respectively are approaching completion while the third, fourth and fifth ones at Fengyang, Hai-vee and Hsuan-chen respectively are still under organization.

**A New Industry of China.**—Mr. Wang Teh-chang, a native of Weihsien, Shantung, has raised a large sum of money for the purpose of opening a factory at Tsinan to manufacture nitric acid and sulphuric acid which have hitherto been imported from abroad.

**Manufacture of Matches in China.**—The manufacture of Chinese matches is growing rapidly and will soon be a serious competitor of the Japanese industry. There are now four factories in the neighborhood of Tientsin, and though one has had to close down the remaining three have a producing capacity of 4,000 tons a month. The actual monthly output is about 2,500 tons, as against a demand of 2,000 tons. Stocks in Tientsin and vicinity total 7,000 tons.

**Latest Reports of New Corporations Established.**—According to reports the following new corporations have been lately established :—

Lung Man Towel Manufacturing Co., Paoshan, near Shanghai.

Yi Wu Hosiery Manufacturing Co., Sungkiang, near Shanghai.

Kong Kee Hosiery Manufacturing Co., Soochow, Kiangsu.

Hwa Sun Dyeing & Weaving Co., Tientsin.

North China Steamship Navigation Co.

Chen Wu Cheng Zinc Mining Co., Chekiang.

Ming An Flour Mill, Tsinan.

Hwa Chang Hosiery Manufacturing Co., Shanghai.

Jih Sin Soap Factory, Peking.

Hing Kih Timber Co., Ltd., Kirin.

The Central Trading Corporation.

The Great China Fire & Marine Insurance Co., Chekiang.

Doong Pao Mining Co. (by Mr. Liang Shih-yi, address unknown).

Hung Chi Steamship Navigation Co., Lingshou, Chekiang.

Pu Chi Steamship Navigation Co., Lingshou, Chekiang.

Da Foong Weaving & Spinning Co., Shanghai.

Shih Nih Bank, Tientsin.

China Agriculture Co.

Chin Hwa Electric Machinery Co., Peking.

**Progress of Cloth Factory. Hankow.**—Being excellent in quality and cheap in price the various kinds of drapery manufactured by Chang Yung Chen Cloth Weaving Factory, Hankow, find a ready market. With this in view, Mr. Chang Kong-chen, proprietor of the factory, has ordered two additional machines to increase its producing capacity.

**The Japan Bottle Industrial Co.,** organized with a capital of Y.350,000, quarter paid up. Bottle manufacturers. Office, 28 Sanchome, Nidori-cho, Honjo, Tokyo.

**The Nihon Kozia Co.** was organized recently with a capital of Y.10,000, quarter paid up, to manufacture cement. Office, 3 Itchome Yurakucho, Kajimachi-ku, Tokyo. Manager, Mr. K. Uyehara.

**The Dai Nihon Artificial Marble Co., Ltd.**—Capital Y.300,000, one half paid up. Office, 283 Yanaka, Nippori, Tokyo-fu. Managing Director, Mr. K. Murakami.

**Cotton Manufacturers.**—The Imperial Cotton Manufacturing Co., Ltd., organized recently with a capital of Y.50,000, one half paid up. Office, 1 Hichi chome, Aoyama kita machi, Shibuya, Tokyo. Manager, F. Fukuda.

**Fukyo Medicine Co.: Capital Y.10,000.**—Manufacturers of chemicals. Office, 10 Jinbo-cho, Kanda-ku, Tokyo. Mr. K. Kugen.

**Kukuda & Co.,** organized recently, 93 Nishi Hirai-cho, Fukagawa-ku, Tokyo. Manager, Mr. Y. Fukuda. Woodcutters.

**Machine Tool Manufacturers.**—The Japan and America Industrial Machine Co., Ltd. organized recently. Capital, Y.30,000, one half paid up. Office, 2 Yamashita-cho, Kyobashi-ku, Tokyo. Manager, Mr. T. Yosai.

**Hunan to Open Leather Goods Factory.**—A new factory named Hunan Ngao-hua Leather Goods Manufacturing Co. with a capital of $20,000 is being organized by Messrs. Soong Ngao-kan, Wu Chien-hsun, Tang Sun-tze and Tso Tien-ju. Mr. Ping Pu-chen has been appointed as manager and Mr. Zar Chen-king as assistant manager, and machinery and other necessary supplies are being ordered from the Loshan workshop.

**Start Paper Factory.**—A number of Chinese merchants have started a paper factory in Hsihoyen, outside Chienmen, called the Huakuo Paper Factory, which has been sanctioned by the government.

**Pao Yuan Paper Mill.**—Paper milling is a profitable undertaking in China. The two mills at Shanghai have been doing an exceptionally good business, one mill, the Lung Chang plant, is reported as having made a profit of several million dollars within a few years.

**A New Cotton Mill.**—An addition to the long list of cotton mills now in existence is a new plant that is soon to be installed at Pootung, the building occupying 40 *mow* of land. The mill is to be equipped with 100,000 spindles of Chinese manufacture and the engine and motors have been ordered from a German firm. The mill also plans to instal 800 hand cotton gins and twenty to be operated by oxen. Operations are expected to begin during August.

**Textiles.**—The Tung Hsing Spinning and Weaving Mill, a branch of the Ho Tung Spinning and Weaving Company, was organized last May with a capital of $15,000,000 ($3,700,000 actually paid-up). Its new buildings will be on Gordon Road and Yangtszepoo in Shanghai. Work will commence in September.

The Changchow Spinning and Weaving Company of Changchow, Kiangsu, has been registered by the ministry of agriculture and commerce.

The Hua Yu Cotton Weaving Company at Teh Yu-lee, Nanking Road, is being organized by Kiang Chuang-fu with a capital of Tls. 40,000 for manufacturing worsted goods. It has been registered by the Shanghai magistrate.

The Sui Tai Handkerchief Factory at Yangtszepoo, Shanghai, was organized by Pan Suikyieh, a Shanghai merchant, with a capital of $10,000. Work will commence as soon as all the machines have been installed.

The Chun Min Needle Weaving Co. on Jessfield Road, Shanghai, manufactures socks.

The Ching Feng Spinning and Weaving Mill of Kiangsu has been reigistered by the ministry of agriculture and commerce.—*Bureau of Economic Information.*

**Japanese Equipping Their Own Mills.**—Japanese companies are now manufacturing considerable quantities of sugar mill machinery, and equipment for at least two Formosan mills has been made entirely in Japan, says Carl K. Hedemann, engineer, with the New York division of the Honolulu Iron Works Co., who recently arrived in Japan from Formosa. Mr. Hedemann went to that island to superintend construction of a mill being built by the iron works company.

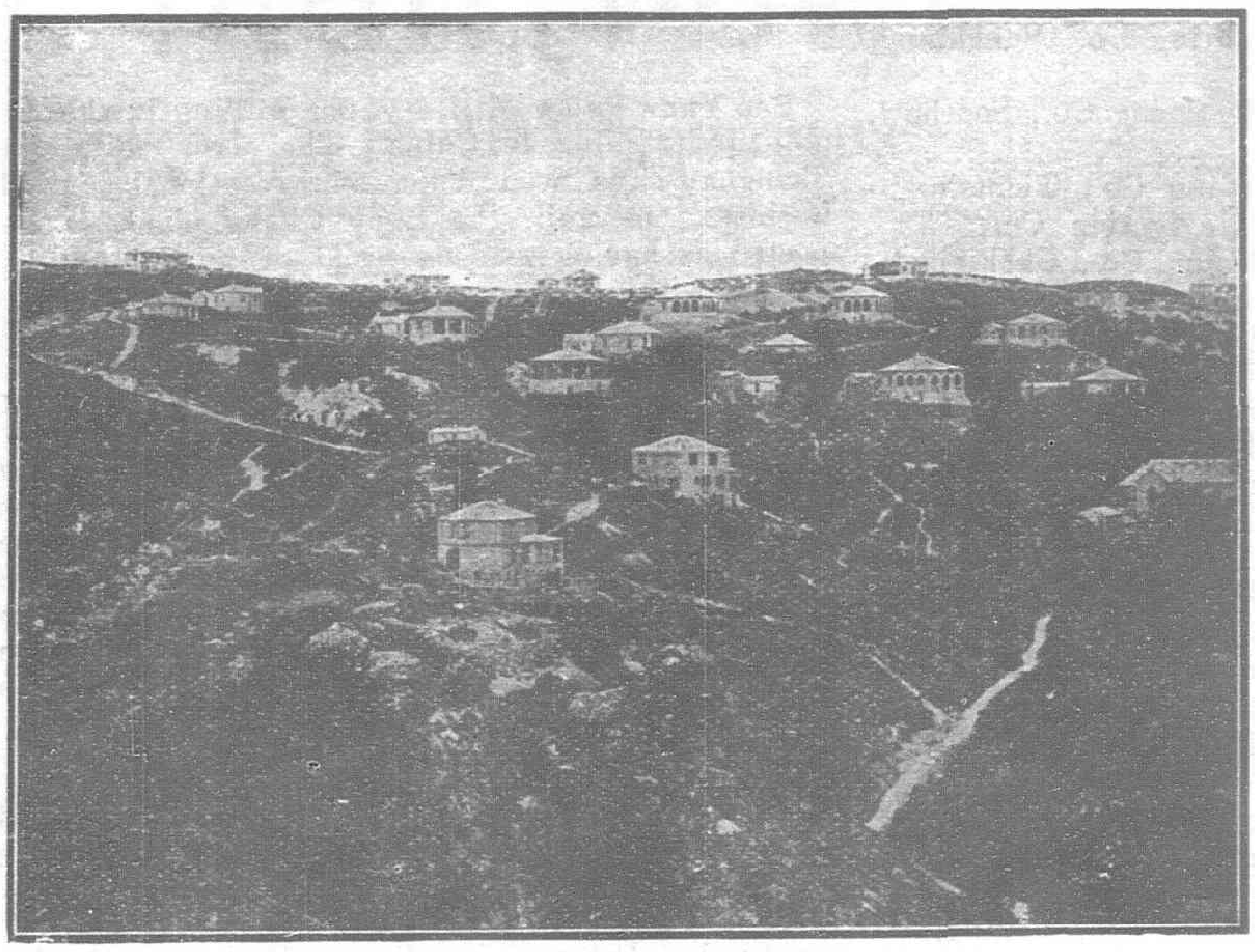
**Nagoya Cement Company.**—The Nagoya Cement Co., of Tokyo, which recently completed the construction of its manufacturing plant, has secured mining rights for limestone in Shiga and Miye prefectures. With its present equipment the company's production may amount to 200,000 barrels annually. It is said that the major portion of its production will be sold to hydro-electric companies.

**Okawa & Co.,** organized recently to manufacture wire. Office, 98 Yeikyu-cho, Osakusa, Tokyo. Manager, Mr. M. Shishikura.

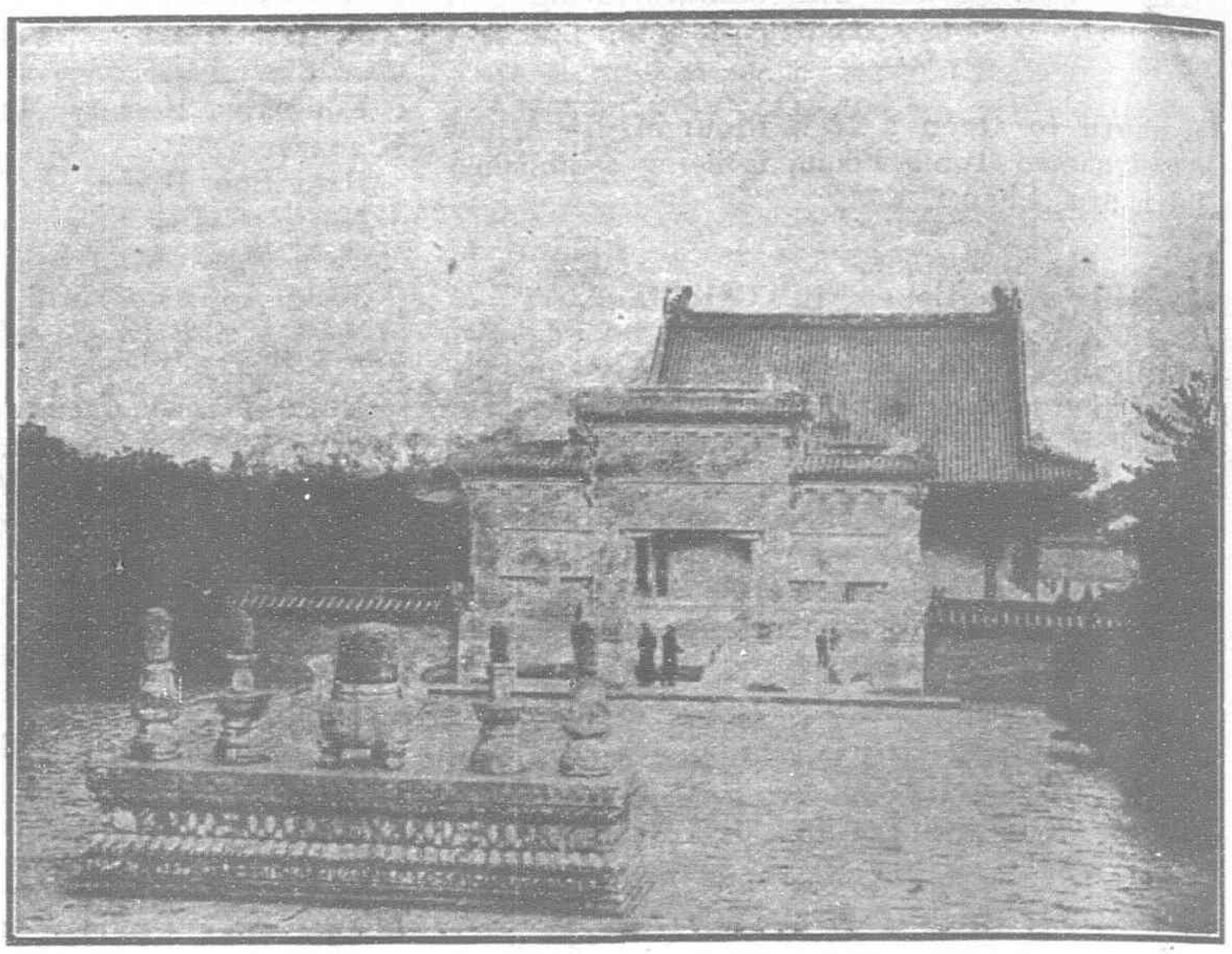
**The Marudai Dye Co., Ltd.,** organized recently. Office: 527 Sotoyama, Namozui-cho, Osaka. Manager: Mr. G. Ito. Manufacturers of sulphuric dyes.

**New Type of Weaving Machine Invented by Chinese.**—Upon presentation of a new type of weaving machine recently invented by Mr. Wang Kien-chong, a Tientsin merchant, to the ministry of agriculture and commerce, the inventor has been granted all patent rights for five years.

# CHINESE GOVERNMENT RAILWAYS



SUMMER RESORT AT CHI KUNG SHAN



TOMB OF EMPEROR YU CHENG NEAR LIANG KOW CHWANG

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THE Peking-Hankow Line, the most important section of China's overland route, enables tourists and travellers to get a glimpse of Old China, the train passing through magnificent scenery, traversing the great plains of Chihli, the central portion of Honan and the mountainous regions of the eastern Hupeh province.

The Peking-Hankow route joins at Fengtai the main line of the Peking-Mukden Railway, by means of which this line is connected with the railways in Manchuria, Korea, Japan, and Siberia, while steamer facilities at Hankow bring it into easy communications with the Yangtze River ports and Shanghai.

From the Capital to Hankow the journey occupies 34 hours, by the daily through train which is provided with up-to-date sleeping and dining accommodations.

In the future, this line will connect by means of a ferry-boat the Hankow-Canton Railway whose completion will bring the Capital of China, and Hankow, the Great Central Market, within easy distance of Canton the southeastern metropolie.

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**Chikungshan Mountain (Summer Resort).**—Not many Summer Resorts in China inland, can bear comparison with the natural charming views, that reward those who ascend the mountain of Chikungshan, whose summit stands at an altitude of 1,980 ft. On reaching Sintien station, situated 110 miles from Hankow, a serpentine road climbs the mountain, on top of which are hundreds of beautiful bungalows awaiting vacationists. This popular resort is celebrated for its scenery, where an almost unbroken communion with nature can be enjoyed for a week at a time.

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**Hsi-ling or Western Imperial Tombs.**—With their present-day accessibility, there is now little excuse for visitors to Peking omitting a trip to the Western Imperial Tombs, undoubtedly one of the most impressive sights in China. The site of these beautifully adorned Imperial Tombs is close to Liang Ko Chwang station, 79 miles from Peking, which is reached by a Branch-line, formerly built for the exclusive use of the Imperial Sovereigns when visiting the Tombs of their ancestors. The Western Tombs include the mausoleums of four Manchu Emperors and three Empresses, as well as those of a number of Princesses. The region, as a well laid-out park, closely wooded, is justly appreciated for the charming scenery surrounding the Imperial Tombs and is highly recommended to any one in search of the extraordinary and beautiful.

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**Production of Sugar in China.**—Although the production of sugar is one of the oldest of Chinese industries the development of beet has completely disorganized the Chinese trade. Formosa now almost equals China in sugar manufacture, whilst Java also has contributed a great deal to the decline of this country's industry. Mr. Ma Yu-shan, who has been studying the question in America, has interested himself in the problem, and has offered $5,000,000 for the erection of four factories in Hongkong and Shanghai. He also contemplates cultivating beet in the neighborhood of Tientsin, and sugar cane in Kwangtung. In view of the enterprise of Mr. Ma Yu-shan, his company has been granted a ten years' exemption from provincial likin tax. In the meantime, the Tsinan Po I sugar factory has been established for several months. The capital of the factory is $5,000,000. Two tons of beet seeds have been sown on the experimental farm, which is about 220 *li* in area. The machinery used for the manufacture of sugar is of American make. The daily consumption of beets is 500 tons and the amount of sugar turned out monthly is about 1,000 tons, and is mostly consumed in the provinces of Chihli, Honan, Anhui and Kiangsu. Two hundred and fifty persons are employed in the factory.

**New Cotton Mill.**—The Wing On Company is promoting a three million dollar cotton spinning mill at Shanghai.

**Vermicelli Factory Opened, Harbin.**—A vermicelli factory equipped with machinery was opened in June at Tung-tze-chia-tze, Harbin. The new company is capitalized at $200,000 and about 50 flour mills at Harbin are said to have been interested in the enterprise.

**Weaving Machinery Factory, Harbin, Chinese Initiative.**—Mr. Chao of Haiyang-hsien, Shantung, graduate of the Tsinan Normal School, has recently invented two kinds of weaving machines after seven years' hard study. The one made of wood capable of weaving towels or narrow cloth is particularly designed for the use of individuals, and the other made of iron capable of weaving cloth or satin in every design can manufacture eight pieces at one time when operated by a single worker. To reward his valuable invention, he has been granted a permit by the ministry of agriculture and commerce to work his inventions for a period of twenty years. A factory to undertake the new enterprise is being established with a capital of $1,000,000 at Sungkiang-chen, Harbin, by the inventor supported by his fellow countrymen.

**A Modern Brewery Under Organization, Harbin.**—Mr. Wu Yih-tang and several others are establishing a modern brewery named Chen-chang to be equipped with machinery with a capital of $1,000,000 at Taku-chia, Harbin.

**A Lumbering Co. Being Organized in Kirin.**—Mr. Chao Peng-dee, a wealthy and prominent merchant of Kirin, is organizing the Shun Kih Lumbering Co. with several others at a capital of $280,000.

**A New Textile Plant in Kashing.**—The branch of the Wei Chen Textile Plant of Hangchow is being established in Kashing, and is expected to operate in August, 1921.

**Soochow To Establish A Straw Weaving Co.**—A straw weaving factory to be operated by machinery is being organized at Soochow by Mr. Chen Kwei-kwei, a graduate of a certain higher technical school. The new factory will manufacture mats, straw hats, straw sandals, etc.

**China National Sugar Refining Co. Under Organization.**—The China National Sugar Refining Co., Ltd., is being organized at Shanghai with a capital of $5,000,000 to be divided into 100,000 shares at $50 each. Among its promoters, the most prominent figures are Messrs. Chang Chien, M. Y. San, C. C. Nieh, Chien Chao-nan and Dr. C. T. Wang.

**A Gigantic Enterprise.**—We are staggered, says the *Canton Times*, by a report in the vernacular press that certain Chinese capitalists from abroad are proposing to organize a huge company with a capital of $150,000,000 to establish a tea factory in Fukien, a sugar manufacturing and refining company in Kwangtung, a silk factory in Chekiang, a cotton mill in Kiangsu and a bank in Shanghai. Besides these enterprises, says the report, these ambitious capitalists are going to open a steamship company, and a mining concern. The sole object of the proposed organization is to manufacture and export native products and to import foreign machinery. Two gentlemen are said to have been appointed by the organization to make a general survey of the possibilities in China, while the chairman of the Chinese chamber of commerce at Rangoon and the chairman of the Chinese chamber of commerce at Manila will look after the matter of soliciting shares to the proposed organization.

**Silk Weaving Plant at Soochow.**—The modern silk weaving plant which was erected sometime ago by a Chinese company with a capitalization of $400,000 at Soochow is a success. The plant is equipped with 100 looms, seventy for satin and thirty for crepe, and can take care of spinning and dyeing. Twenty electric looms have recently been added.

**Cement Plant Near Shanghai.**—A cement manufacturing plant to be operated by Chinese capital will be erected soon near the Kiangnan Arsenal, Shanghai, according to the native press. The raw material is to be brought from Chinkiang.

**Business Opportunities in North Manchuria.**—The National Association of Manufacturers, New York, suggests that American firms interested in the development of the natural resources of northern Manchuria communicate with the Association of Engineers of the Railway Zone of the Chinese Eastern Railroad at Pravlenskaja Street, No. 41 Harbin, Manchuria, China. Manchuria is regarded as favorable for the development of saw mills and woodworking plants, tanneries, paper mills, bean oil mills and other industrial plants. There is some demand for mining machinery and supplies. The use of small motors for industrial purposes and river tug-boat and barge construction is expected to increase.

**Another Cotton Mill in Wusih.**—The King-Fung Cotton Spinning and Weaving Mill situated west of the Wusih railway station, promoted by Messrs. Sih Nan-ming, Shen Ngao-ching, Tsa Chien-shan and Tang Pao-chien, has started to operate. It is capitalized at $800,000 and equipped with 15,000 spindles.

**Need for Sugar Mill Equipment in Java.**—Opportunity for the renewal of plant is afforded in the sugar mills of Java, many of which are either out of date or in need of repair, writes Trade Commissioner John A. Fowler. Investigation has also shown that in the case of one of the finest mills in the island a very high percentage of sugar content is left in the cane. This is due to insufficient fuel supply and to waste of power, which should be considered in connection with the installation of further machinery, such as extra rolls and bagass burners, to bring these mills up to approximately 100 per cent. efficiency. While some of the 187 sugar mills operating in Java are small, others have two and four sets of rolls. A conservative estimate would place the average value of machinery for these mills on a pre-war basis, at approximately $750,000, representing about $140,000,000 worth of sugar mill machinery in Java. If figured on the basis of present-day prices, this amount would probably be doubled, and to bring these mills up to efficiency, without replacement, would require an additional investment of from 10 to 20 per cent. Because of the economy exercised during the war in repairs and extension of plants, it is believed that at least 70 of the Java mills will have to be replaced within the next few years. For the future of American sugar mill machinery interests in Java, it is essential to keep good men with a technical knowledge in this field. For a list of Java sugar mills refer to file No. FE-100, which will be loaned by the district offices or the far eastern division to interested parties.—*Commerce Reports.*

## LIGHTING

**China Demands Gas-filled Lamps.**—At the moment there seems to be a brisk demand in China for gas-filled lamps, but there are few, if any, such bulbs of British manufacture to be seen in the shops. Those offered for sale are mostly of Dutch or American manufacture. In view of the fact that in places like Hongkong, Shanghai and Canton the shopkeepers revel in rivalling Broadway in illuminations, there is a large scope for an enterprising salesman. In this connection it seems advisable to point out the disadvantages of appointing firms as agents having agencies for lamps of foreign origin; as the foreign manufacturers are always ready to offer very liberal terms to the agents, the latter find it more profitable to push the sales of foreign goods. The art of advertising one's goods in China also requires a judicious selection of the medium; indiscriminate advertising in all the papers published in English is not likely to produce satisfactory results, as 99 per cent. of these papers are never seen by the purchasing public.

## MINING

**Deposits Discovered in Manchuria.**—Japanese mining engineers report that deposits of magnesite of great potential value have been found in Manchuria within a few miles of the South Manchuria Railway.

**Gold Mining Development Bureau of Tung-Hua Engaging in Larger Mineral Areas.**—The Gold Mining Development Bureau of Tung-Hua, Fengtien, whose activities have been hitherto limited to the Tung-hua Hsien, has been recently granted by the ministry of agriculture and commerce to develop a mine field covering an area of more than 1,000 *mow* at Hsien-mio-kiu in Ling-kiang, its neighboring district.

**Gold in the Federated Malay States.**—In 1920 there was placed on the market in the Federated Malay States 12,853 ounces of gold. 11,476 ounces were produced by the Australian Gold Mining Co. (Ltd.), at Raub, Pahang State. Perak produced 1,368 ounces and Negri Sembilan 9 ounces. The quartz mine at Raub, as the figures show, is the principal producer. The other gold is found with tin in the alluvium in Perak, and a small quantity in Negri Sembilan.

**Iron Mine at Vee-See-Hsien to Operate.**—Under the approval of government, an iron mine extending over 80 *mow* and 3,000 square feet located at Sha-tung-shan in Yung-an village of Vee-see-hsien, Yunnan, is being opened by Mr. Lee Yue-shen.

**Copper Mine Discovered at Fuming Hsien.**—Copper veins have been discovered at Lao-ching-shan in Fu-Ming Hsien, Yunnan, and chemical experiments have shown that the deposit consists of about 25 per cent. pure copper.

**Pewter Mine Discovered, Tung-Ning-Hsien.**—In the spare land belonging to Yue Ning Co., about 60 *li* south of Sui-feng river in Tungning-hsien, Kirin, there has been recently discovered a mineral deposit, white in color and light in weight, which the local inhabitants are ignorant of. Upon examination by experts it has been found to be pewter, and it is reported that some Russians are planning to develop the property.

**Tientsin To Organize A Large Mining Co.**—The Pei-Piao Coal Mining Co. is being organized in Tientsin by Chinese officials and merchants.

**Mineral Survey in South Manchuria.**—The production of steel on a commercial basis by the South Manchurian Railway Company is expected to result from the comprehensive survey of the company's coal and iron ore properties by six American geological and engineering experts, which will be completed August 24th, when the party will return to America. W. R. Appleby, dean of the School of Mines of the University of Minnesota, heads the party, which also includes W. J. Mean, professor of geology, University of Wisconsin; W. H. Emmins, professor of geology, University of Minnesota; Frank Hutchinson, consulting engineer and specialist on ore benefication of Duluth; L. D. Davenport, formerly chief engineer and W. Crago, formerly exploration engineer, for the Oliver Iron Mining Company of Duluth and Boston.

The Coal property which is to be examined is estimated to have about 1,200,000 tons deposit and a vein 150-ft. wide. It is now producing about 10,000 tons, which production it is hoped to double. The ore deposits are located at Fushun.

Mr. Yozo Tamura, who represents the South Manchurian Railway Company in America, is accompanying the experts.

**Peking Ministry's Mining Report.**—According to the report of the ministry of agriculture and commerce, during the month of May permission to operate mines was granted as follows :—

| Mines | Location | Mineral Area | Merchant's Name |
|---|---|---|---|
| Coal | Hwei-hsien, Honan | 1 sq. *li* 387 *mow* and 3305sq. ft. | Kuo Sung |
| .. | Hsuan-chen, Anhwei | — | Liu Sing-tso |
| .. | Wu-lung-hsien, Kirin | 2,144.6 *mow* | Liu Kuo-fan |
| .. | Tsuyuanhsien, Shansi | — | Yang Tien-chong |
| .. | Pingtinghsien, Shansi | — | Ning Wei |
| .. | Chuyungsien, Kiangsu | 529.6 *mow* | Wang Tze-men |
| .. | Wei-chen-hsien, Shansi | 6 sq. *li* 287.76 *mow* | Liu Zao-pang |
| .. | Chang-shun-hsien Chekiang | 1,906 4 *mow* | Loh Pah-hung |
| .. | Wei-chen-hsien, Shansi | — | Feng Lu-yi |
| .. | ,, | 404.6 *mow* and 48 sq. ft. | Tsai Ting-hsien |
| .. | Datunghsien, Shansi | — | Nien Shi-jui |
| .. | Fan-chang-hsien Anhwei | 841.1 *mow* | Lee Tee-yuan |
| .. | Fu-sing, Jehol | 5,250 *mow* | Han Quen-tai |
| .. | Ning kuo, Anhwei | — | Shen Tsing ching |

During the same month, the following deposits have been discovered and application for preliminary workings by the following named merchants were passed by the ministry :—

| Mines | Location | Mineral Area | Merchant's Name |
|---|---|---|---|
| Coal | Shehsien, Honan | 5 sq. *li* and 491 *mow* | King Jui |
| .. | Shoneehsien, Shansi | — | Li Tze-an |
| .. | ,, .. | 4 sq. *li* 261 *mow* and 1220 sq. ft. | Tien Kien-hsuan |
| .. | Tsinchenhsien, Shansi | 7 sq. *li* 510 *mow* and 4450 sq. ft | Chow Chao-hsu |
| .. | Between. Datunghsien and Tsuyuanhsien, Shansi | 6 sq. *li* 376.5 *mow* | Wei Sung-hua |
| .. | Shoneehsien, Shansi | 8 sq. *li* 483 *mow* and 2850 sq. ft. | Keng Tze-yue |
| .. | Chinyenhsien, Kiangsu | — | Chen Hsien |
| .. | Chinchen, Shansi | 8 sq. *li* 455 *mow* and 3887 sq. ft. | Yao Chee-yao |
| .. | Chin-cheng, Shansi | 5 sq. *li* 533 *mow* and 1150 sq. ft. | Pang Chien chin |
| .. | Wei-chen-hsien, Shansi | 300 *mow* and 3162 sq. ft. | Chao Chang keng |
| .. | Pei-tsai-kew, Suiyuan | — | Liu Foong-tsai |

## OIL

**Chinese Oil Resources.**—In the June 2, 1921, issue of the *London Financier*, attention is drawn to the existence of rich oil deposits in China. In the province of Kansu, south of the desert Gobi, at the base of the Nanchung mountains and near the River Tsche-King-sia, are situated petroleum rocks. The oil, which is collected from daily accumulations in about a dozen wells of 3 feet, is used as lubricating and illuminating oil. In the mountainous district of the province of Shensi, about 100 miles southwest of the town of Ningtiaoliang, there are said to be rivulets of petroleum descending from great heights from red rocks and sands. There are also to be found in this district limestone, coal and large quantities of gas. The crude oil, which is of various colors, is used principally as an illuminant for lamps, the black, viscous oil being employed as a lubricant.

Although not the richest of China's oil resources, the best known are the petroleum wells of North Shansi, which for many years have supplied the country with illuminating oil. The petroliferous formations that distinguish the transcaucasian oil fields are known to cover a vast range and it is contended that some of the richest gushers will be developed in the Chinese section. Although the production of oil in China has been neglected in the past, there is substantial basis for the belief that the field offers great opportunity for the future development of a vast source of supply. The article in question, which goes into this interesting subject in great detail, may be obtained from the Far Eastern division.—*Commerce Reports.*

**Fuel-Oil Supplies for Japanese Government.**—The Asiatic Petroleum Co. (British), has recently completed a contract (through the Rising Sun Petroleum Co.) to furnish the Japanese government with 200,000 tons of fuel oil. When this contract is fulfilled the existing tanks of the Japanese government will be filled to capacity. New tanks, however, are being constructed. The efforts on the part of the Japanese government to buy out the oil interests of some subsidiary companies in the Dutch East Indies were not successful. Also the efforts of the government to develop the oil fields in Saghalien are meeting with little success, not because of the lack of oil, but chiefly on account of the remoteness of the oil fields and the severity of the climate which permits operations during not more than three months of each year.

**Petroleum in China.**—According to latest report, there are 22 petroleum wells in Chihli, 4 in Fengtien, 2 in Kirin, 13 in Kweichow, 17 in Yunnan, 8 in Shensi, 5 in Kiangsu, 4 in Kwangsi, 4 in Hunan, 4 in Kiangsi, 3 in Szechuan, 2 in Hupeh and 1 in Kwangtung, making a total of 91 wells of which Chihli, Kweichow, Yunnan and Szechuan possess the best.

**Oil Mills in Tientsin.**—The refined oil industry in North China is on the increase, eight mills now being in operation in the city of Tientsin. Four are of Japanese ownership, three of Chinese and one of Italian, the latter being established as the city's first mill. The Italian mill has a daily output of 6,000 catties of peanut, linseed and castor oils, and recently has increased its capitalization from $100,000 to $200,000. Its product, which is pressed by both the hot and cold process, is for export exclusively. The Sino-Japanese Oil Mill was originally started by a group of Chinese and was eventually sold out to Japanese interests. It has a plant valued at $100,000, which has a capacity for a day of twenty-one hours of 7,000 catties of peanut oil. The Peiyang Oil Mill is a pure Chinese concern with $60,000 capital. The Hsin Nun Oil Mill has a capitalization of $200,000 and is using the American method of extracting the oil. The Chun Wah Oil Mill specializes in cotton seed oil and has a daily capacity of 4,000 catties.

## RAILWAYS

**Cheng-kar-tung-Pei-ying-tai-lia Railway Under Construction.**—The construction work on the prolonged section from Cheng-kar-tung or Pei-ying-tai-lai on the Sze-ping-kar-Cheng-kar-tung Railway is carried on steadily in spite of the rainy season which has now come in that locality. Up to present, a distance of about 20 miles westward from Cheng-kar-tung has been laid with rails, and judging from the present working it is generally believed that the new line may be opened to traffic within this current year.

**Light Railway Proposal, Shantung.**—Messrs. Hsu Pao-tien and Liang Chu-chien have secured a capital of $500,000 for the construction of a light railway from Pao-shan to Tai-an. The proposed line will have a length of about 120 *li* and will, when completed, bring Tai-an into connection with the branch of Kiaochow-Tsinan Railway, meeting together at Paoshan.

**New Railway : Japan.**—The proposed construction of a private railway along the eastern coast of Kabafuto, mainly for the purpose of serving the convenience of the paper mills in Kabafuto, was decided upon recently, and the railway company, with a capital of ten million yen, will be established for that purpose.

**Ssupingkai-Taonan Railway.**—The Chengchiatun-Paiyintala extension to the Ssupingkai-Chengchiatun section already in operation, of the Ssupingkai-Taonan Line of the Chinese Government Railways promises to be opened to traffic provisionally by next November, when the next produce season gets well started. The Chengchiatun-Paiyintala section has been divided into three subsections, on which work was commenced simultaneously, and the rails are now being laid. It is 72 miles in length as against 50 miles of the Ssupingkai-Chengchiatun section, but the line traverses a level plain which is, by the way, quite fertile. The construction work has been progressing with ease, and no serious difficulty is likely to be experienced even in the rainy season. Sleepers are being supplied from Kirin way in a satisfactory manner.

**Railways in Korea.**—With regard to the business condition of the Korean railways for last fiscal year, an official in the Seoul office of the S.M.R. Company states that, on account of the inactivity of the transport business due to the general economic depression, the receipts of the company during the period have shown a considerable decrease, resulting in a loss of over Y.1,000,000.

When the estimates for last fiscal year were drawn up by the company, the transport business was most prosperous and nobody expected such a sudden advent of financial depression as overtook the empire last year. As a matter of fact, with the idea of making good the shortage the Company revised the freight tariff in June last year. The economic depression, however, had already set in at the time and receipts witnessed a marked decrease. To make matters worse, the transport business suffered a heavy blow through the great flood and the prevalence of cholera throughout the peninsula. To cope with the situation, the management did everything possible to curtail with the result that fuel alone showed a decrease by Y.780,000. Since the Korean railways came into the hands of the S.M.R. Company four years have elapsed, and though the Company realized a net profit of nearly two million yen for each of the first two years, that money had been invested in the railway undertaking in Korea. The last two years the Company suffered a loss of Y.1,850,000 in all and was obliged to make good that amount by a subsidy from the Tairen office.

In connection with the above it is understood that the business prospects of the Korean Railways for the current year show little improvement and rumor is afloat that further economy will be effected by a great reduction in the number of employees.—*Seoul Press.*

**Harbin-Heilungkiang Railway May be Constructed.**—Arrangements are being made by local authorities for the construction of the Harbin-Heilungkiang Railway, which is long needed, by Municipal bureau at Ma-kar-Jen-kow and raising appropriating a fund of $4,000,000 from the another $4,000,000 by other means. The sections between Fu-lan and Sui-hua and Sui-hua and Hai-lung will be built first.—*Chinese Press Report.*

**Total Revenues of Chinese Railways.**—The ministry of communications has recently promulgated a statement showing the total revenue from January 1 to April 30, 1921, of the various railways under the control of the ministry as follows:—

| Name of Railway | Jan. 1 to Apr. 30 1921 | Corresponding period, 1920 |
|---|---|---|
| Peking-Hankow ... ... | $6,523,838 | $191,180 |
| Peking-Mukden ... ... | 7,120,154 | 1,592,294 |
| Tientsin-Pukow ... ... | 4,892,461 | 324,890 |
| Peking-Suiyuan ... ... | 1,553,502 | 350,176 |
| Shanghai-Nanking ... | 1,891,485 | 272,449 |
| Shanghai-Hangchow ... | 851,947 | 135,840 |
| Tsangting-Taiyuanfu ... | 929,636 | 332,442 |
| Canton-Kowloon ... ... | 374,008 | 77,371 |
| Kirin-Changchun ... ... | 808,805 | 127,809 |
| Daokow-Chinghua ... ... | 252,551 | 7,007 |
| Chuchow-Pingshiang ... | 78,995 | 82,301 |
| Chongchow-Amoy ... ... | 10,184 | 5,563 |
| Kaifeng-Laoyang ... ... | 52,665 | 100,064 |
| Canton-Hankow ... ... | 480,290 | 24,605 |
| Sze-Tao ... ... ... ... | 205,212 | 78,412 |
| Total ... ... | $26,699,736 | $1,619,053 |

**Would Extend Suiyuan Road.**—The waichiaopu has suggested to the ministry of communications that, owing to the absence of communications in northwest China, progress in the construction of the North-Western Railway should be made as soon as possible. It is reported that the ministry of communications received this suggestion favorably, and is now considering a plan for the extension of the Peking-Suiyuan Railway from Suiyuan to Ninghsia.—*Renter's Pacific Service.*

**Negotiation Made for New Railway.**—The Industrial Bank of Japan has been negotiating with the ministry of communications in regard to a loan for the construction of the Kirin-Huanining Railway, to run from Kirin through Yenchi and across the Tumen River into Korea.

**Nantungchow Cotton Mill Building Light Railway.**—With a view to faciliating transportation, the Dah Sung Cotton Spinning & Weaving Mill (No. 3), Nantungchow, has constructed a 12 *li* long light railway at north of the factory extending to Tsin-loong-kong, an important water way in that district. To make the transportation more convenient, a further distance of 2 *li* will be tracked, so that it can reach Tsin-loong-kong.

**To Repair Light Railway.**—In connection with repairing work of the Lo-yang Bridge, General Wu Pei-fu has decided to repair the light railway from Lo-yang to Loong-men first, so that materials for the re-construction of the bridge may be transported to the working place direct without any difficulty.

**Feng-Huang-Tai to Establish Railway Station.**—It is reported that the Kaifeng-Loyang Railway administration is planning the establishment of a railway station at Feng-huang-tai, a town between Chenchow and Chungmai, Honan.

**New Rolling Stock to Tientsin-Pukow Railway.**—It is reported that the Tientsin-Pukow Railway administration has obtained the approval of the ministry of communications for purchase of 50 passenger cars from a certain American corporation.

**Improvement Work on Sze-Tao Railway.**—Along the Sze-tao Railway, the old bridges which were roughly built are being replaced with new modern ones. In construction of the bridge over Laohu at Sankiang-kew, much difficulty has been experienced, but the difficulty has been finally overcome, and the work is expected to be completed in another month.

The work on the branch line from Chen-chia-teng to Pei-ying-tai-lai was commenced from April 1, 1921, and the track is being laid at present. The construction work is carried on exclusively by native engineers.

## RIVERS, HARBORS, WHARVES AND DOCKS

**A New Port in Shantung.**—With regard to the opening of a port at Tsiningchow, Shantung, it is reported that a company has been fully organized to carry out the scheme. It is said that the Shantung provincial authorities and the various ministries concerned in Peking are ready to support the undertaking. The company has already collected $3,000,000 and proposes that the government should furnish the remaining $200,000. It is understood that the ministry of finance has offered to provide treasury bonds for that amount, and that the shuiwuchu is considering the question of establishing a Customs station at the port.—*Reuter.*

**Tai-Lu Lake Conservancy Work.**—For the conservancy works of the Tai-hu Lake a sum of $300,000 has been allocated to Kiangsu and $200,000 to Chekiang by the Peking government. The work is being carried on by the Tai-hu Lake conservancy board under the directorship of Mr. Wang Tsing-mo. As recommended by Mr. von Heidenstam, engineer-in-chief of the Whangpoo conservancy board, a small dredging machine at a cost of about $240,000 will be purchased.

**Port Improvement.**—Sukeo, near Haichow, is, as mentioned recently, the proposed location of a new port as the maritime terminal of the Lunghai railway now under construction and already operating between Hsuchowfu, on the Tientsin-Pukow Railway, and Kwanyintang in Honan province. A Belgian engineer has been engaged for the last few months in an investigation, and the final location of the harbor is now dependent on the report of the engineers who are now making a survey.

**Conservancy Work of Nantungchow.**—At a meeting held by conservancy exports at Nantungchow, Mr. Chang Chien dealt with the importance of the conservancy work and pointed out the careful survey of rivers, sluices, etc., as first step of flood prevention. In accordance with the decision of the meeting, four surveying parties composed of native and foreign experts were dispatched to carry out the survey in various parts of the district. After the survey work many sluices will be built at important places where circumstances render it necessary. A fund of $200,000 has been secured for this purpose.

**Chang-Yi-Tung as a Commercial Port.**—With regard to the improvement work of Chang-yi-tung, Kirin, the northern part of the city has been opened as a commercial port with modern roads built, while the southern part remains undeveloped. In order to improve the city, work will be immediately carried out in the southern portion.

**To Build a Harbor at Lien-Shon-Wan, Fengtien.**—The general chinese chambers of commerce in Mukden, Kirin, Harbin and Heilungkiang and the trade unions of the Three Eastern provinces have jointly telegraphed to the ministry of agriculture and commerce requesting the opening of Lien-shan-wan as a commercial port and building a harbor there. As the plan will involve a large amount, the merchants suggested that a loan of G.$10,000,000 should be made with American capitalists in the name of Chinese merchants and they asserted that they would hold themselves responsible for the loan.

**New Port in Shantung.**—With regard to the opening of a port at Tsingingchow (Shantung), it is reported that a company has been fully organized to carry out the scheme. It is said that the Shantung provincial authorities and the various ministries concerned in Peking are ready to support the undertaking. The company has already collected three million dollars and proposes that the government should furnish the remaining two hundred thousand dollars. It is understood that the ministry of finance has offered to provide treasury bonds for that amount, and that the shuiwuchu is considering the question of establishing a customs station at the port.

**Harbor Works, at Moji and Shimonoseki.**—The Japanese diet has sanctioned an appropriation of funds for harbor, reclamation and other works at Shimonoseki to the amount of Y.3,600,000, and at Moji to the amount of Y.4,050,000.

These sums are for preliminary work, to be spread over a period of six years. In Moji it is proposed to reclaim and re-arrange the water-front so as to provide space for a wide road, an area for warehouses, a mooring wall 1,400 yards long, a coaling berth, and the usual appurtenances of cranes, etc. In Shimonoseki it is proposed to carry out reclamation and reinforcement of the water-front and to construct a small dock.

The sums mentioned above are obviously insufficient for a scheme of any great dimensions; a comprehensive plan which would solve the problem of furnishing a safe and convenient harbor, making full use of the terminal railway facilities, and concentrating in one place the now diffused activities of the two ports, does not appear as yet to have been seriously considered.

Some very imposing schemes have been talked about, but have presented difficulties which so far have proved insuperable. As for the proposed tunnel under the Shimonoseki Straits, it is stated in some quarters that it is to assist foreign trade, in others that it is for national defence, and in still others that it is to facilitate communications between Kyushu and the mainland. It does not appear clear, however, that it would make much difference to national defence, nor how it would assist foreign trade. So long as the bulk of the cargo of foreign-going ships is carried to or from central Japan, ships will go to ports in central Japan, and will call at Moji only for coal. The tunnel will not help the coal, for it is already on the Moji side.

As for the trade between Kyushu and the mainland, it is certainly active, but it is hard to believe that its volume would justify the cost of a tunnel, which would have only a limited carrying capacity, and would not be used for transporting the principal commodity, coal, which passes across the Straits.

It is considered possible that the tunnel scheme will be gradually dropped, at least for the present. It may be revived later if money becomes very plentiful; but even so, there are great technical difficulties to overcome.—*Board of Trade Journal.*

**Tsiningchow to be Opened to Foreign Trade.**—The proposal to open Tsiningchow (Tsining) in Shantung province to foreign trade has been approved by the central government, but the regulations to govern the commercial port have not yet been completed nor the date for the opening determined. Tsining, one of the largest cities in Shantung, with an estimated population of 200,000, is located on a spur of the Tientsin-Pukow railway, and is in one of the best wheat districts of the province. It is also on the Grand Canal, and if the plans for improving that waterway are eventually carried out Tsining is likely to become a provincial distributing centre of considerable importance. A mill equipped with American machinery, with a daily capacity of 2,400 bags, is already in operation. A modern egg-drying factory, with American machinery, is established there, as well as an electric-light works, also American equipped, which supplies light for the city.

**A Floating Dock on the Yangtze.**—According to the Hankow native press, the large floating dock which for some time has been in course of construction by the Yangtze Engineering Works at Seven Mill Creek, has been successfully completed and launched. The new floating dock will prove a great convenience for the carrying out of repairs to vessels in the upper portion of the Yangtze.

## ROADS

**Tientsin Roads to be Extended in Width.**—A scheme is being carried out in Tientsin to extend all the roads in width.

**Tientsin-Tunghsien Road Started.**—It is reported that the construction work on the road from Tientsin to Tung-hsien, Chihli, has been commenced.

**An Automobile Road Proposed, Anhwei.**—Mr. Chen Kai-hsuan, a wealthy merchant of Anhwei, has proposed the establishment of an automobile service company and construction of an automobile road from Songchu to Pengpu via Kwei-yi, Bow-chow, Mon-cheng and Hwei-yuan, and it is understood that the proposal has received favorable consideration by the provincial authorities.

**Road Repairing in Fur-Ping Hsien.**—By order of the magistrate, some important roads in Fur-ping Hsien, Chihli, are being repaired and paved. The work will be done by famine sufferers.

## SHIPPING

**Pei Fong Steamship Navigation Co. Established, Tientsin.**—The Pei Fong Steamship Navigation Co., capitalized at $300,000, has been established at Tientsin by Mr. Li Ching-hsuan under the approval of the ministry of communications.

**Chung-Hua Steamship Navigation Co. Re-Organized.**—The Chung-hua Steamship Navigation Co., Hunan, which went into bankruptcy some time ago, has been taken over for business by the San-pei Steamship Navigation Co., Shanghai, at a cost of Hankow Tls. 180,000, has been re-named the Hung-An Steamship Navigation Company.

**The Old "Kiangteen" to Go.**—As the steamer *Kiangteen* running between Shanghai and Ningpo has become too old to render a satisfactory service, The China Merchants' Steamship Navigation Co. has ordered from Hsiang Sung Dockyard, Pootung, a new steamer to take its place. The new vessel to be named *Hsin Kiang Tien* is expected to launch in September.

## TELEGRAPHS AND TELEPHONES

**Telephone being Established at Kaoyue, Kiangsu.**—The ministry of communications has sanctioned the request of the chief of the Telegraph Office of Kaoyue, Kiangsu, to have telephone system established in the city.

**Telegraph Office Established in Kao-Yang-Hsien.**—By order of the ministry of communications, a telegraph office was established at Kao-yang-hsien, Chihli, and began to accept and send messages on April 28, 1921.

**Telegraph Office at Wang-geo-chen.**—Mr. Ting Kuo-chun, chairman of the chamber of commerce of Wang-geo-chen, at Tai-shun-hsien, Kiangsu, has requested the ministry of communications to establish a telegraph office in that locality, where a large business has been built up. It is stated that Mr. Ting has succeeded in raising a capital of $2,000, and that the proposal has received favorable consideration.—*Chinese Press Report.*

**Telegraphic Equipment on Kirin-Changchun Railway.**—In order to secure a regular service of telegraphic communication along the Kirin-Changchun Railway, a plan for the improvement of telegraphic equipment is being contemplated by the authorities concerned. According to the plan, telegraphic wire and posts will be installed along the line where there is no such equipment at present, some single wires will be doubled where circumstances render it necessary, and any old posts which have been found to become decayed will be replaced with new ones.

**The Japanese Government** will expend Y9,800,000 on telegraph and telephone office and equipment (both wireless and wired).

**Wireless Telephonic Communication** between Fusan, Korea and Japan will shortly be effected.

**A Cable between Seattle and Vladivostok.**—The construction of a cable line between Seattle and Vladivostok via Alaska, the Kurile Islands (belonging to Japan), and the Soya Strait between Hokkaido and Kabafuto (Saghalien) has been decided upon. It is reported that a Bill therefor has been presented to the U. S. congress. The construction cost is put at G.$25,000,000.

**A New Telephone Company.**—The ministry of agriculture and commerce has registered the Shao Hsin, Chekiang.

## TRAMWAYS

**Hankow to Have Tramway System.**—Mr. Lu Hung-yang, a wealthy merchant, has planned to establish a tramway system at the rear part of the city of Hankow, and has presented a set of regulations governing the new scheme to the local officials for approval.

**Tsinan Tramway System Proposed.**—With a view to facilitating communications, Mr. Mar Tai-ming has suggested the establishment of a tramway system at Tsinan, and an application has been made to the ministry of communications for permission to carry out his project. The aforesaid ministry is considering the proposal and has sent a representative to Tsinan to make investigations.

**Tramways in Japan** will be built as follows, government permission having been received : In Hokkaido, by the Hokkaido Colonial Co., 51 miles : and by the Uraho Coal Mining Co., 11 miles.

In north-east Japan : 23 miles by the Hakozaki Tram Car Co. : 22 miles by the Kariha Tram Car Co. : 13 miles by the Sendai Tram Car Co.

Centre Japan : 296 miles by the Japan Electric Tramcar Co. : 47 miles by the Shonari Electric Co. : 29 miles by the Nagoya Electric Tramcar Co. : 26 miles by the Teuryn Electric Car Co. : 33 miles by the Teuryn Hydro-Electric Tramcar Co. : 32 miles by the Chita Tram Car Co.

Western Japan : 55 miles by the Ungei Tram Co. : 52 miles by the Chunan Tram Car Co. ; 47 miles by the Geinan Tram Car Co.

Shikoku and Kyushu : 12 miles by the Imari Tram Car Co. : 46 miles by the Awa Tramcar Co.

## WATERWORKS

**Nanking Waterworks, Ltd. Being Organized.**—At the meeting held in Nanking regarding the establishment of a waterworks, it was decided that the institution is to be named 'Nanking Waterworks Co., Ltd.' and that it is to be capitalized at $2,000,000.

**Chinkiang Waterworks Planned.**—Mr. Chu Chung-fu, a prominent merchant of Chinkiang, is again trying to establish a waterworks company at Chinkiang, which was proposed some years ago but afterwards reached a deadlock on account of lack of funds.

**To Establish Waterworks: Kaifengfu.**—In Kaifengfu, about ten *li* away from the Yellow River, water for drinking and cooking food is entirely obtained from the wells which are said to contain impurities. Messrs. Shen Chung-chin and Wang Kai-fong, Chekiang merchants residing in Kaifengfu, will establish a waterworks there. Schemes regarding the enterprise have been drawn up and the cost including machinery and reservoir is estimated at $600,000.

**Waterworks Project at Hsuchowfu.**—For some months there has been a plan on foot to instal a waterworks system to supply the city of Hsuchowfu with pure water. Hsuchowfu, writes Consul John K. Davis, is a city well located to become a commercial centre of some degree and importance. In the province of Kiangsu it is at the juncture of the Tientsin-Pukow and the Lung-Hai railways, and will soon be connected by a motor-car line with a town located on the Grand Canal. The source of the water supply is to be a number of artesian wells and the total initial cost of the scheme is said to be Tls. 150,000, equivalent to about $133,875 American currency. As the water obtained from wells is too hard for immediate use, it is planned to instal a plant in which water can first be filtered and softened by chemical treatment. It is planned at first to distribute water from hydrants located at convenient points in the streets. An American engineering firm has been consulted, and in the event the plan materializes will probably succeed in obtaining the contract for installing the plant.—*Commerce Reports.*

**A Water Power Co. Proposed, Fukien.**—Mr. Sung Fah-hsiang has proposed to establish a water power company with a capital of $20,000 at Hsien-yu-hsien, Fukien, where a water supply is easily obtainable from Kiu-li-hu and Kiu-loong-dai Lake. If the proposal proves to be successful, industrial plants there can be driven by means of the water power.

**Kiangsu Tuchun to Promote Waterworks, Nanking.**—General Chi Shih-yuan, tuchun of Kiangsu, will give an audience to the chairman of the Nanking chamber of commerce and several other local prominent merchants to discuss the early organization of a waterworks in Nanking, which was proposed a long time ago.

**Two Waterworks Companies Proposed, Fukien.**—Mr. Changhai Ching-yung has applied to the Foochow industrial bureau for permission to establish a waterworks Co. at Fong-tze-chin, Shen-han Hsien, and Mr. Liu Gee for a waterworks Co. at No-kow-chin, Chao-wu Hsien. The proposals are under the consideration of the authorities concerned.

## WIRELESS

**Japanese Building Radio at Tsingtau.**—The Japanese authorities at Tsingtau have completed the construction of two wireless towers and are now awaiting the arrival of the necessary electrical equipment from Japan before opening the new wireless plant. The two towers have been constructed from material captured from the Germans in 1914, and the plant will, when fully equipped, be powerful enough to communicate with any wireless station in Japan.

**Wireless Used in Indo-China.**—It has been decided to utilize wireless teclegraphy as a means of communication between Saigon and Hanoi. The submarine cable which connects Cochin-China and Tonkin is subject to frequent breakage, the cost of repairing which entails greater expense than the credits allowed, and for lack of credits it has been impossible to repair a breakage which occured in October, 1919. However, in order to assure continuity, permanence, and the regular service of telegraphic communications, the governor general of Indo-China considers the employment of the coast cable as still necessary, and he proposes to assure all the expenditures entailed for the latter out of the budget of the colony. This decision would place Indo-China in possession of a submarine cable which connects its two most important points, Saigon and Haiphong.—*Commerce Reports.*